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The Hunterian Lectures
ON
MALFORMATIONS OF THE HEART.

Delivered before the Royal College of Surgeons of England on March 8th, 10th, and 12th, 1909,

BY ARTHUR KEITH, M.D. ABERD., F.R.C.S. ENG.,

HUNTERIAN PROFESSOR, ROYAL COLLEGE OF SURGEONS OF ENGLAND, AND CONSERVATOR OF THE MUSEUM.

LECTURE II.[1]

Delivered on March 10th.

Transposition of the arterial stems.—If the theory of a bulbus element in the human heart helps us to understand the numerous abnormalities which were discussed in my last lecture, it is of even greater assistance in clearing up the various abnormal and very puzzling conditions included under the term of transposition of the aorta and pulmonary artery. The pulmonary artery in these cases of transposition arises behind the aorta, over the left ventricle, while the aorta springs from the infundibulum of the right ventricle. Thus the venous blood is thrown by the right side of the heart into the aorta and systemic circulation while the arterial blood is carried back to the lungs by the pulmonary artery. Altogether I have examined 25 hearts in which the arterial trunks were transposed, six of them being in the College collection. Fig. 11 shows the arrangement of parts in a specimen which may be regarded as typical of the group. The aorta, recognised not only by its distribution but also by the fact that the coronary arteries are given off from it, arises from the infundibulum of the right ventricle—that part of the ventricle which is derived from the bulbus cordis. The pulmonary artery occupies the position of the aorta and springs from the left ventricle. The exact condition of parts is best seen by examining a section made at the base of the heart (Fig. 12). In the normal heart the aortic orifice is situated behind the pulmonary orifice and immediately anterior to the left auricle and left auriculo-ventricular orifice. The aortic cusps corresponding to the origin of the right and left coronary arteries—right and left coronary cusps—are situated towards the sternal margin of the aorta, the non-coronary towards the dorsal margin. In the abnormal heart the position of parts is reversed; now the aorta is in front and the pulmonary artery behind; the position of the aortic cusps is reversed, the non-coronary cusps being now not on the dorsal but on the sternal margin of the aorta. Further, it is to be noted that the aorta arises from the infundibulum or persistent bulbus cordis, while the pulmonary artery arises directly from the left ventricle, the part of the bulbus corresponding to it having atropied, but the atrophy is sometimes only partial.

FIGS. 11 AND 12.

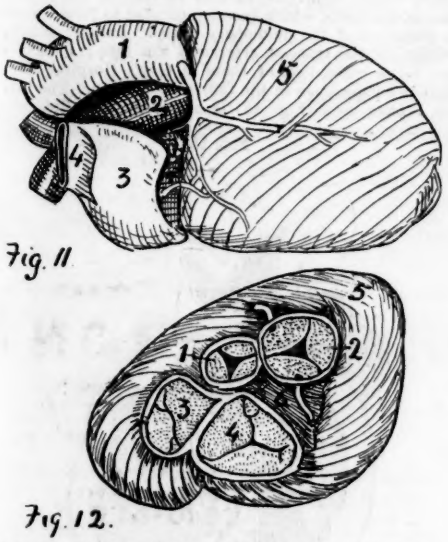
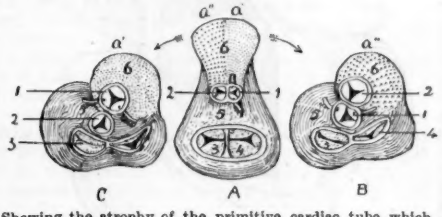


FIG. 11.—Heart showing transposition of the great stems (viewed on its right side). 1, Aorta; 2, pulmonary artery arising behind aorta; 3, right auricle; 4, superior vena cava; and 5, infundibulum of right ventricle giving origin to aorta.

FIG. 12.—The base of the heart shown in Fig. 11. 1, Pulmonary artery; 2, aorta (non-coronary cusp); 3, anterior cusp of mitral valve; 4, septal cusp of tricuspid; 5, infundibulum of right ventricle; and 6, triangle of persistent basal musculature.

How is transposition brought about? The explanation offered by Rokitansky—the only explanation yet given—is that the aortic end of the heart may undergo an abnormal degree of rotation, either to the right hand or to the left, and the form of transposition depends on the extent of the rotation. Such a theory does not really help us. The clue to the problem is to be found in a study of the remarkable transformation of the mammalian embryonic heart. We have already seen how the lesser curvature of the bulbo-ventricular segment of the cardiac tube shrivels up during the early period of development. By the third week the ventricular segment of the primitive cardiac tube is bent transversely towards the right (Fig. 9, Lecture I.), so that it occupies a position comparable to the adult stomach, the auricular canal representing the œsophagus and the bulbar part the pyloric end. In Fig. 13 A I have represented what I conceive to be the primitive form of the bulbo-ventricular part of the heart; in Fig. 13 B is shown the atrophy that leads to the aorta being brought into juxtaposition with the mitral orifice; and in 13 C the changes which lead to the pulmonary artery being brought into contact with that orifice. In the first case the bulbus connected with the aorta atrophies and the part connected with the pulmonary artery undergoes an expansion; in the second case the processes are reversed. The aorta instead of being the dorsal vessel is now the ventral and situated towards the greater instead of towards the lesser curvature (Fig. 13 C). With the atrophy of the lesser curvature of the ventricle and pulmonary part of the bulbus, it is the pulmonary artery in place of the aorta that comes into contact with the auricles. In effect, the origin of the great vessels is reversed as regards the auricular canal (compare 13 B with 13 C). No one has seen an embryo in which the pulmonary part of the bulbus was undergoing a process of atrophy in place of one of expansion, but the assumption is justified by the fact that a complete explanation is thereby obtained of the condition seen in hearts with transposed arterial trunks. The theory explains why the aorta is in front of the pulmonary artery and also the reversion in the position of its valves. We see further why the bulbus cordis persists in connexion with the aorta and forms the infundibulum, while the part of the bulbus connected with the pulmonary artery atrophies.

FIG. 13.

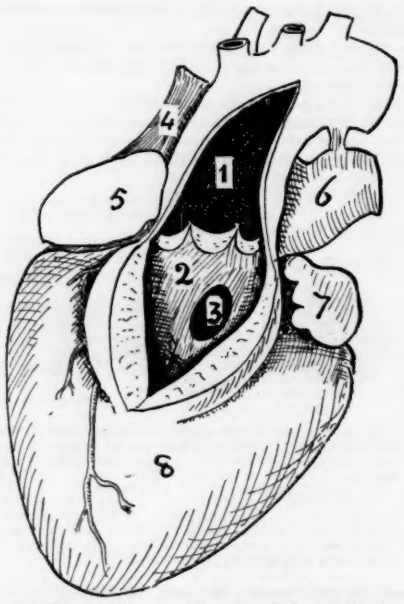


Showing the atrophy of the primitive cardiac tube which leads to the normal position of the arterial orifices (B) and to the abnormal position (C). A, Primitive ventricle and bulbus cordis viewed on the aspect of their lesser curvature. B, The normal position of the arterial orifices. C, The abnormal position. 1, Aortic orifice; 2, pulmonary orifice; 3, mitral orifice; 4, tricuspid orifice; 5, body of common ventricle; and 6, bulbus cordis. a', Right half of bulbus which atrophies in B, the normal form; a'', left half of bulbus which atrophies in C, the abnormal form.

[1] Lecture I. was published in THE LANCET of August 7th, 1909, p. 359.

Of the 25 cases of transposition 19 were of the type just described; there are at least two modifications of this type. In one of these modifications the interventricular septum is so ill-developed that there may be said to be a common ventricle. Four such cases are included in my list. Professor A. H. Young and Professor A. Robinson have lately described a fine example of this modification. The pulmonary artery arises directly from the common ventricle, while the aorta arises from the infundibulum or bulbus cordis, which communicates with the common ventricle by an orifice varying much in size and distinctness (Fig. 14). Another and still

FIG. 14.



Transposition of the arterial stems. (After Rokitansky.) 1, Aorta; 2, separate small cavity from which the aorta springs, probably derived from the bulbus cordis; 3, orifice leading into common ventricle (the ostium bulbi); 4, superior vena cava; 5, right auricle; 6, pulmonary artery; 7, left auricle; and 8, common ventricle.

rarer form of transposition—I have seen only two cases—is that in which the aorta arises from the left ventricle and the pulmonary artery from the right, but the origin of the pulmonary artery is situated behind the aorta and has no infundibulum or bulbus; the aorta, although situated in front of the pulmonary artery, arises from an infundibulum attached to the left ventricle.

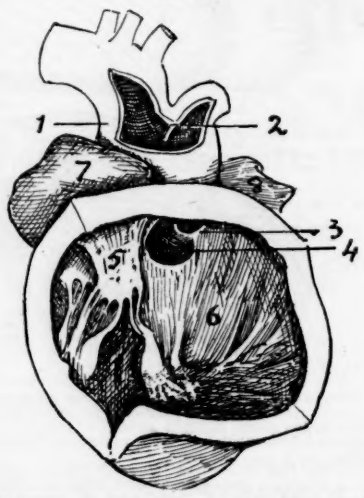
In transposing the great arterial stems Nature tries an impossible experiment; two independent circulations are thereby arranged, the right heart supplying and receiving the systemic blood, the left side the pulmonary blood. Were the septa of the heart complete the child would die from suffocation as soon as born. But the septa are never complete. There are four possible communications in such cases between the pulmonary and systemic circulations: (1) the foramen ovale may remain open or some other defect may be present in the interauricular septum; (2) an interventricular foramen may persist; (3) the ductus arteriosus may remain open; and (4) the communication between the bronchial and pulmonary arteries and veins may be very free. By one or more of these communications the venous and arterial bloods are allowed to mingle sufficiently to carry on the respiratory needs of the system. The prospect of life depends on the freedom with which such an interchange takes place. Indeed, the cases which live longest are those in which the two ventricles communicate so freely that they may be regarded as a common chamber; in some cases of this nature the patient has passed into adult life without his defect being discovered and may reach the age of 45 or 50 years. In most cases of transposition life is supported with difficulty and the slightest affection of the lungs is sufficient to cause death. The apex of the heart is in its normal position, and I know of no case in which the condition has been diagnosed during life. Yet the superficial position of the aortic valves, the great hypertrophy of the infundibulum ought to give a second sound which is peculiar as regards character and position.

With transposition of the stems there is usually a greater or less degree of stenosis of the pulmonary orifice. In 17 of the 25 cases there was pulmonary stenosis; the stenosis is not due merely to a union of the semilunar valves; there is commonly also a remnant of the bulbus below the orifice corresponding to sub-aortic stenosis. That the pulmonary artery should be so liable to stenosis when there is transposition is a most interesting fact, for it occupies the position normally taken by the aortic orifice which is so rarely occluded. The inference I draw from the fact is that stenosis is more likely to occur in a side stream than in a main stream; the pulmonary circuit is a secondary one in the fœtus; the aortic is the primary one. In other words, congenital stenosis is to some extent the result of a mechanical condition.

Reversion of the heart.—Transposition of the great trunks must not be confused with a true reversion or transposition of the part of the heart seen in cases where the viscera are transposed. I have seen four examples of this condition, one of which is in the College collection. McCrae has recently described a most instructive case in which the reversion of parts was accompanied by complete stenosis of the infundibulum. Reversion of the heart is frequently accompanied by irregularities in the arrangement of its parts.

Imperfect separation of aorta and pulmonary artery.—All the defects so far described, and they make up a great majority of cases which need medical assistance, are related to a maldevelopment or irregular incorporation of the bulbus cordis in the heart. We now pass on to another structure which cannot rightly be said to be part of the heart—the truncus arteriosus, which becomes divided to form the root of the aorta and of the pulmonary artery. Irregularities in the division of the truncus arteriosus are rare; I have only seen three cases, two of them in Guy's Hospital Museum. There is no specimen in the College collection. The illustration I have used (Fig. 15) is borrowed from Rokitansky's

FIG. 15.



Incomplete separation of pulmonary artery from ascending aorta. (After Rokitansky.) 1, Aorta; 2, pulmonary artery; 3, lower end of imperfect septum beween aorta and pulmonary artery; 4, interventricular foramen; 5, tricuspid valve; 6, interventricular septum; 7, right auricle; 8, left auricle.

work, and shows the commonest form where the truncus has not been divided, the pulmonary arteries springing directly from the ascending aorta. In one of the specimens at Guy's Hospital there is a perforation of the septum between

pulmonary artery and aorta, which would have the same functional effect as a patent ductus arteriosus.

Patent ductus arteriosus.—A patent ductus arteriosus is usually correlated with some malformation of the heart, but cases do occur in which—as far as one can see—there is no other lesion. I have seen only two such cases. We have no specimen of the condition in the Museum collection, nor have we any specimen of an aneurysm of the ductus, which apparently is not a rare condition. Gibson of Edinburgh has pointed out that the thrill and bruit caused by a patent ductus persists into the diastolic pause—unlike a murmur of intracardiac origin.

Malformation of semilunar valves.—Although abnormalities of semilunar valves are very common—altogether I came across over 50 museum specimens—their study has been peculiarly barren of any useful knowledge. This is largely owing to the fact that many specimens are put up in such a way that it is impossible to know the relationship that existed between the pulmonary and aortic semilunar cusps when the parts were *in situ*. The normal relationship of the six cusps is shown in Fig. 13 B. It will be remembered that, on the division of the truncus arteriosus, two of its four valves are included in the division, giving rise to the two non-coronary cusps in the aorta and the septal or posterior cusps of the pulmonary artery. In 25 cases where it was possible to distinguish the septal cusps from the others it was seen that the right septal cusp of the pulmonary artery was subdivided in six cases, the left also in six, so that in these 12 cases there were four cusps. In one case the non-septal or anterior cusp was absent. In the aorta the non-coronary cusp was absent in one, small in one, and subdivided in four. The right coronary cusp was divided in two cases and united with the left coronary in three.

Imperfect formation of septa.—Having passed in rapid survey the numerous malformations which occur at the aortic or distal end of the heart, I propose now to examine the various defects found in connexion with the development of the septa of the heart. The form of abnormality I shall take first is the comparatively rare one where the septum between the right and left auriculo-ventricular orifice is incomplete. There are two specimens illustrating this condition in the College collection; I have seen 14 altogether, the lesion being remarkably alike in all. Professor T. Wardrop Griffith has described two cases. When the auricles of such a heart are opened (see Figs. 16 and 17) the anterior cusp of the

FIG. 16.

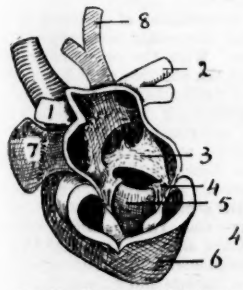


FIG. 17.

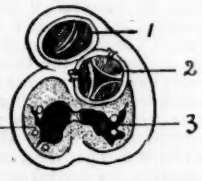


FIG. 16.—Heart of child showing a communication between the auriculo-ventricular orifices due to non-union of the endocardial cushions. 1, 2, Left and right pulmonary veins; 3, interauricular septum; 4, continuity between posterior cusps of mitral and tricuspid valves; 5, inter-ventricular septum, forming lower margin of the abnormal foramen; 6, left ventricle; 7, left auricle; and 8, superior vena cava.

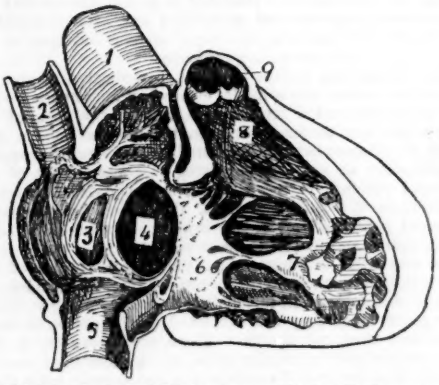
FIG. 17.—Section of base of same heart to show continuity of mitral and tricuspid valves. 1, Pulmonary artery; 2, aorta; 3 and 4, tricuspid and mitral valves.

mitral is seen to be continuous with the anterior or infundibular segment of the tricuspid, while the posterior cusp of the mitral is continuous with the mesial or septal segment of the tricuspid. When the left auricle and ventricle are opened the appearance seen is that represented in Fig. 16. The common auriculo-ventricular anterior and posterior curtains are draped over the interventricular septum, the parts of the valves situated on the septum being puckered and warty in appearance. These parts which in the normal course of development should have fused and joined in the formation of the central fibrous body of the heart, have remained apart, recalling the condition of hare-lip, where also the normal union of adjacent parts has failed.

The condition of parts seen in such specimens is directly comparable to that which occurs in the hearts of amphibia and dipnoi—the air-breathing fishes. The common auriculo-ventricular orifice in these vertebrates is furnished with four valves—two small lateral and two larger valves, one on the dorsal, the other on the ventral side of the orifice (Fig. 17). In the human embryo the dorsal and ventral valves are named endocardial cushions; by the end of the fifth week, when the embryo is about 5 millimetres long, the central parts of these cushions or valves, lying directly over the interventricular septum, have fused, offering a substratum where the musculature of the interauricular and interventricular septa may obtain a common point of purchase. The condition of the interauricular septum in such abnormal hearts is shown in Fig. 16; the lower margin of the septum forms a crescent, which arches from the dorsal to the ventral valve—a condition exactly similar to that seen in the frog. Non-fusion of the endocardial cushions produces an amphibian condition; the free communication thus established between the two sides of the heart is interventricular, not interauricular. Non-fusion of the endocardial cushions is never present alone; it is associated with some grave lesion, either transposition of the great trunks or stenosis of the pulmonary artery. Death usually occurs in childhood. I have not seen the lesion in the heart of an adult.

The foramen primum.—The defect in the septum just considered leads naturally on to the next form, one in which the endocardial cushions have fused but are still separated from the crescentic lower margin of the interauricular septum by a space at which the blood in the two auricles may become mixed. This deficiency in the interauricular septum is known as the foramen primum. There is no specimen in the College Museum; I have seen five cases; the

FIG. 18.



Right chambers of a child's heart exposed to show the foramen primum. 1, Aorta; 2, superior vena cava; 3, fossa ovalis; 4, foramen primum; 5, inferior vena cava and Eustachian valve; 6, septal cusp of tricuspid; 7, musculus papillaris of right ventricle; 8, infundibulum; and 9, pulmonary artery.

one from which the illustration is taken (Fig. 18) occurred at the London Hospital. Professor Wardrop Griffith and Professor Peter Thompson have given good descriptions and figures of this defect. It is not necessarily accompanied by any grave disturbance in the action of the heart.

Patent foramen ovale.—Patency of the foramen ovale is so common that I have excluded it from my list of heart malformations. In a combined investigation by Professor E. Fawcett and Dr. J. V. Blachford the foramen was found more or less open in 96 out of 306 individuals, all of them above the age of ten years. They found that it was open more frequently in the old than in the young. I have observed that patency of the foramen ovale is very frequent in those cases where the right auricle has become dilated and the septum expanded by any condition which leads to a distension of the right side of the heart. To what extent such cases are relieved by the blood in the right auricle being permitted to escape to the left or *vice versâ* there is no clinical evidence to show, but one would infer that it is an advantageous condition.

ON THE PREPARATION AND KEEPING PROPERTIES OF ANTITYPHOID VACCINES.

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THE use of bacterial vaccines for therapeutic and prophylactic purposes is still sufficiently recent to allow of some divergence of opinion in the details of their preparation, and as this is a point which seriously affects their efficiency and keeping properties, the subject is worthy of consideration. In most laboratories where the preparation of bacterial vaccines is carried out it is the usual custom to sterilise by means of heat, and subsequently to add a small percentage of some reliable antiseptic such as carbolic acid or lysol.

A killed bacterial culture capable of functioning as a vaccine is in reality a toxin (chiefly endotoxin) and is composed of dead bacterial cells, together with their products of secretion and disintegration. According to Ehrlich, a toxin possesses two specific atomic groups—viz., a haptophore or combining group, and a toxophore or toxic group. The haptophore group when untampered with is known to be fairly stable, but it is very susceptible to the action of heat and certain chemical agents. A toxin of bacterial origin deprived of its haptophore group is no longer in a position to function as a toxin when used on susceptible animals, or to influence the cells of the body in such a way as to call forth an immunising response by the production of antibodies. Similarly, a bacterial vaccine deprived of its haptophore group, or which has been prepared in such a manner that the haptophore group becomes attenuated soon after preparation and finally disappears, is no longer to be relied upon in the production of an immunising response.

The toxophore group is more complicated than the haptophore group and is liable, even when untampered with, to become converted into toxoids, and in the case of the endotoxins into toxons; but even toxoids and toxons, provided their haptophore groups remain intact, are still capable of producing an active immunising response. Most of the bacterial vaccines with which we are acquainted are very sensitive to the action of heat, light, and also to some chemical substances. All are injuriously affected by oxidising agents and by strong bases and acids.

As very little is known about the chemical nature of the toxins which enter into the composition of vaccines, it follows that we are still in the dark as to the changes which take place when they are subjected to the action of heat, light, and chemical agents. There are, however, a few facts which have gradually come to be recognised, and in dealing with toxins and vaccines it is necessary to take these facts into consideration.

The German Plague Commission, working in Bombay in 1898, proved that heating a vaccine to 60° C. after the addition of an antiseptic greatly diminishes its immunising properties, and may remove them altogether. Oppenheim and Mitchell[1] make the following statement about the action of heat on toxins: "A special characteristic of toxins is their extreme sensitiveness to the action of heat. In their normal solutions they soon perish at temperatures above 50°C. At 80° C. their action is at once destroyed, and even at 45°C. they are slowly decomposed; individual ferments differ but little in this respect. On the other hand, they offer great resistance to the action of dry heat. Solid preparations can be heated to over 100° C. without suffering injury."

One of us (H. S. M.) has found that evaporation at 60°C. from an alcoholic solution completely destroyed the toxic properties of a filtrate of a broth culture of Shiga's dysentery bacillus, of which a small dose (5 cubic centimetres) had previously proved rapidly fatal to a rabbit. Kitasato in 1891 proved that diphtheria and tetanus poisons in solution are rapidly destroyed by the action of sunlight and diffuse daylight. In the dry state we know that these poisons can withstand the action of light for a prolonged period. It is a well-known fact that the specific agglutinating reaction of a serum can take place when dead bacteria are used, but when the bacteria have been killed by heating the emulsions or cultures to a temperature of 60° C. or more, their agglutinability is diminished, and more agglutinins are required to produce the specific reaction.

The chemical agents harmful to toxins are numerous. It would appear that toxins are very sensitive to nearly all chemical agents, with the exception of carbolic acid. Iodine is an example of a substance which acts on the toxophore group of toxins to form toxoids. Advantage is taken of this fact in the early stages of the immunisation of animals with tetanus toxin. A small percentage of iodine mixed with the toxin during the first few doses tones down its toxicity and paves the way for the administration of the untreated toxin.

It is evident from the foregoing facts that the utmost care should be taken in the preparation of a vaccine intended for therapeutic or prophylactic purposes, to avoid any conditions known to lead to the disintegration of the active principle. It is necessary that its original properties should be interfered with as little as possible.

With the exception of anthrax vaccine, bacterial vaccines are prepared from non-spore-forming bacteria (strictly speaking, anthrax is only a modified exception, for the vaccines in this case are generally prepared from cultures in which spore formation is artificially prevented, or before it has had time to take place). This fact alone renders the sterilisation of a vaccine a comparatively easy task, provided that care is taken to ensure that absolutely pure cultures and pure media are used.

The bacillus typhosus is killed by heating it either in a broth medium or in normal salt solution for a few minutes at a temperature of from 57° to 60° C. It is also killed in either of the above media within 24 hours by the addition of 0·5 per cent. pure carbolic acid. In the preparation of antityphoid vaccine it is necessary to kill the living cultures of B. typhosus from which it is prepared, and it is necessary also to lessen the chances of any subsequent contamination being able to take place. Heating the vaccine at a temperature of 60° C. for 20 minutes, or 53° C. for one hour, will accomplish the former, and the addition of 0·5 per cent. carbolic acid, or 0·25 per cent. lysol, the latter. The addition of 0·5 per cent. pure carbolic acid is by itself quite sufficient to accomplish both objects, and besides it has the additional advantage of enabling us to dispense with the harmful effects of heat.

Another essential in the preparation of vaccines is to prepare them in such a way that they retain their immunising properties as long as possible. With the object of testing whether a vaccine sterilised by the addition of 0·5 per cent. carbolic acid and without any preliminary heating process retains its immunising properties for more than a year, we carried out the series of experiments recorded in this paper, and tested a vaccine stored at room temperature in a dark cupboard at the Central Research Institute, Kasauli, for over two years, against a freshly prepared vaccine. Both vaccines were prepared from the same strain of B. typhosus and in exactly the same way—viz., from a broth culture incubated at 37° C. for 48 hours and then sterilised by the addition of 0·5 per cent. carbolic acid only. The results of the experiments carried out on rabbits and guinea-pigs with these two vaccines (old and fresh vaccines) are recorded in the tables numbered I. to VII. inclusive and Charts 1 and 2. The blood change which took place when the same two vaccines were used on men are recorded in Tables VIII. and IX. and Charts 3 and 4.

In the tables numbered X. to XIII. inclusive, and Charts 5, 6, and 7, three vaccines, each prepared from the same strain of B. typhosus as that used in the previous experiments, but sterilised by heat and the subsequent addition of an antiseptic, are contrasted—viz., an old vaccine and a fresh vaccine, each sterilised by heating at a temperature of 60° C. for 20 minutes, and the subsequent addition of 0·5 per cent. carbolic acid; and a fresh vaccine sterilised by heating for one hour at a temperature of 53° C. and the subsequent addition of 0·25 per cent. lysol.

The results recorded in these tables and the charts attached to them require little or no explanation. As regards the blood changes which took place after inoculation with these vaccines, it was decided to test only for the agglutination and opsonic reactions. In testing for opsonins the

[1] Toxins and Antitoxins, by Oppenheim and Mitchell, 1906, London, Charles Griffin and Co.

TABLE I.—*Experiments on a Rabbit to Test the Immunising Properties of an* Old Antityphoid Vaccine. *This vaccine was prepared on Nov. 25th, 1906, from a 48 hours broth culture. It was sterilised by the addition of 0·5 per cent. carbolic acid. No heating used. It contained 420,000,000 bacilli per cubic centimetre.*

No. of experiment.	Date of injection of vaccine.	Quantity of vaccine used.	Date of examination of serum.	Widal's reaction and dilutions used. 10	20	40	80	160	320	640	1280	2560	Opsonic index.	Effects of the intraperitoneal injection of a virulent strain of B. typhosus recently isolated from a case of typhoid fever. No. of doses lethal in 12 hours.	Date.	Result.
		Bacilli.														
1	Dec. 28th, 1908.	0·2 c.c. = 84,000,000	Jan. 7th, 1909.	+	+	+	+	+	+	−			0·94	1	Feb. 12th, 1909.	Survived; was never ill.
	Jan. 11th, 1909.	0·3 c.c. = 126,000,000	,, 21st, ,,	+	+	+	+	+	+	+	−		8·2			
	,, 23rd, ,,	0·5 c.c. = 210,000,000	Feb. 6th, ,,	+	+	+	+	+	+	+	±	−	5·9			
Control rabbit.	*Nil.*	*Nil.*	Jan. 7th, ,,	+	±	−										
			,, 21st, ,,	+	±	−										
			Feb. 6th, ,,	+	±	−										

TABLE II.—*Experiments on Rabbits to Test the Immunising Properties of an* Old Antityphoid Vaccine. *This vaccine was prepared on Nov. 25th, 1906, from a 48 hours broth culture. It was sterilised by the addition of 0·5 per cent. carbolic acid. No heating used. It contained 420,000,000 bacilli per cubic centimetre.*

No. of experiment.	Date of injection of vaccine.	Quantity of vaccine used.	Date of examination of pooled sera.	Widal's reaction and dilutions used. 10	20	40	80	160	320	640	1280	2560	Opsonic index.	Effects of the intraperitoneal injection of a virulent strain of B. typhosus recently isolated from a case of typhoid fever. No. of doses lethal in 12 hours.	Date of intraperitoneal injection.	Result.
		Bacilli.														
1	Dec. 28th, 1908.	0·2 c.c. = 84,000,000												1	Feb. 12th, 1909.	Survived; was never ill.
	Jan. 11th, 1909.	0·3 c.c. = 126,000,000														
	,, 23rd, ,,	0·5 c.c. = 210,000,000														
2	,, 4th, ,,	0·2 c.c. = 84,000,000	Jan. 31st, 1909.	+	+	+	+	+	+	+	±	−	5·15	1½	Feb. 14th, 1909.	,,
	,, 14th, ,,	0·3 c.c. = 126,000,000														
	,, 23rd, ,,	0·5 c.c. = 210,000,000	Feb. 3rd, ,,	+	+	+	+	+	+	+	+	±	5·64			
3	,, 9th, ,,	0·2 c.c. = 84,000,000	,, 7th, ,,	+	+	+	+	+	+	+	+	−	6·56	2	Feb. 15th.	Died Feb. 16th.
	,, 16th, ,,	0·3 c.c. = 126,000,000														
	,, 23rd, ,,	0·5 c.c. = 210,000,000														
4	,, 9th, ,,	0·2 c.c. = 84,000,000												Not tested.		
	,, 16th, ,,	0·3 c.c. = 126,000,000														
	,, 23rd, ,,	0·5 c.c. = 210,000,000														
Two control rabbits.	*Nil.*	*Nil.*	Jan. 31st, 1909.	+	±	−										
			Feb. 3rd, ,,	+	±	−										
			,, 7th, ,,	+	±	−										

TABLE III.—*Experiments on Rabbits to Test the Immunising Properties of* Fresh Antityphoid Vaccine. *This vaccine was prepared on Dec. 21st, 1908, from a 48 hours broth culture. It was sterilised by the addition of 0·5 per cent. carbolic acid. No heating used. It contained 530,000,000 bacilli per cubic centimetre.*

No. of experiment.	Date of injection of vaccine.	Quantity of vaccine used.	Date of examination of pooled sera.	Widal's reaction and dilutions used. 10	20	40	80	160	320	640	1280	2560	Opsonic index.	Effects of the intraperitoneal injection of a virulent strain of B. typhosus recently isolated from a case of typhoid fever. No. of doses lethal in 12 hours.	Date of intraperitoneal injection.	Result.
		Bacilli.														
1	Jan. 9th, 1909.	0·1 c.c. = 53,000,000												1	Feb. 12th, 1909.	Survived; was never ill.
	,, 16th, ,,	0·4 c.c. = 212,000,000														
	,, 23rd, ,,	0·5 c.c. = 265,000,000														
2	,, 9th, ,,	0·1 c.c. = 53,000,000	Jan. 31st, 1909.	+	+	+	+	+	+	+	+	−	5·2	1½	Feb. 14th, 1909.	,,
	,, 16th, ,,	0·4 c.c. = 212,000,000	Feb. 3rd, ,,	+	+	+	+	+	+	+	+	±	6·07			
	,, 23rd, ,,	0·5 c.c. = 265,000,000	,, 7th, ,,	+	+	+	+	+	+	+	+	−	6·05			
3	,, 8th, ,,	0·2 c.c. = 106,000,000												2	Feb. 15th, 1909.	Died Feb. 16th.
	,, 15th, ,,	0·4 c.c. = 212,000,000														
	,, 23rd, ,,	0·5 c.c. = 265,000,000														
4	,, 8th, ,,	0·2 c.c. = 106,000,000												Not tested.		
	,, 15th, ,,	0·4 c.c. = 212,000,000														
	,, 23rd, ,,	0·5 c.c. = 265,000,000														
Two control rabbits.	*Nil.*	*Nil.*	Jan. 31st, 1909.	+	±	−										
			Feb. 3rd, ,,	+	±	−										
			,, 7th, ,,	+	±	−										

TABLE IV.—*Experiments on Rabbits to Test the Immunising Properties of an* Old Antityphoid Vaccine. *This vaccine was prepared on Nov. 25th, 1906, from a 48 hours broth culture. It was sterilised by the addition of 0·6 per cent. carbolic acid. No heating used. It contained 420,000,000 bacilli per cubic centimetre.*

No. of experiment.	Date of injection of vaccine.	Quantity of vaccine used.	Date of examination of pooled sera.	Widal's reaction and dilutions used. 10	20	40	80	160	320	640	1280	2560	Opsonic index.	Effects of the intraperitoneal injection of a virulent strain of B. typhosus recently isolated from a case of typhoid fever. No. of doses lethal in 12 hours.	Date of intraperitoneal injection.	Result.
		Bacilli.														
1	Jan. 24th, 1909.	0·2 c.c. = 84,000,000												1	Feb. 18th, 1909.	Survived; was never ill.
	Feb. 1st, ,,	0·3 c.c. = 126,000,000														
	,, 9th, ,,	0·5 c.c. = 210,000,000	Feb. 1st, 1909.	+	+	+	+	+	–				1·3			
			,, 9th, ,,	+	+	+	+	+	+	+	±	–	5·45			
2	Jan. 24th, ,,	0·2 c.c. = 84,000,000	,, 16th, ,,	+	+	+	+	+	+	+	+	±	7·5	1½	Feb. 19th, 1909.	,,
	Feb. 1st, ,,	0·3 c.c. = 126,000,000	,, 19th, ,,	+	+	+	+	+	+	+	+	±	8·6			
	,, 9th, ,,	0·5 c.c. = 210,000,000														
Two control rabbits.	*Nil.*	*Nil.*	,, 1st, ,,	+	±	–										
			,, 9th, ,,	+	±	–										
			,, 16th, ,,	+	±	–										
			,, 19th, ,,	+	±	–										

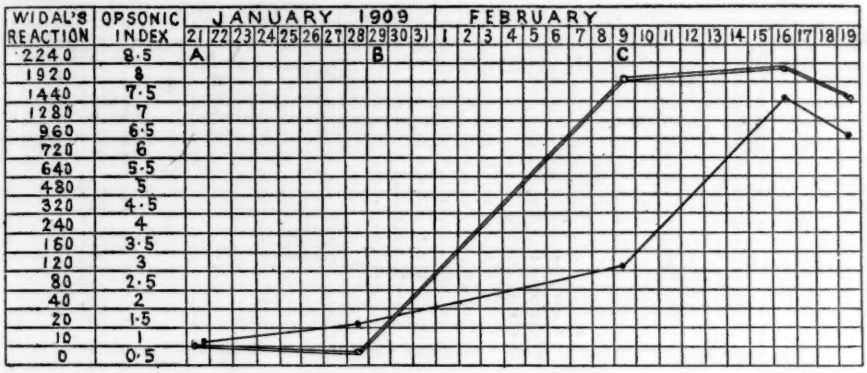
TABLE V.—*Experiments on Rabbits to Test the Immunising Properties of* Fresh Antityphoid Vaccine. *This vaccine was prepared on Dec. 21st, 1908, from a 48 hours broth culture. It was sterilised by the addition of 0·5 per cent. carbolic acid. No heating employed. It contained 530,000,000 bacilli per cubic centimetre.*

No. of experiment.	Date of injection of vaccine.	Quantity of vaccine used.	Date of examination of pooled sera.	Widal's reaction and dilutions used. 10	20	40	80	160	320	640	1280	2560	Opsonic index.	Effects of the intraperitoneal injection of a virulent strain of B. typhosus recently isolated from a case of typhoid fever. No. of doses lethal in 12 hours.	Date of intraperitoneal injection.	Result.
		Bacilli.														
1	Jan. 24th, 1909.	0·2 c.c. = 106,000,000												1	Feb. 18th, 1909.	Survived; was never ill.
	Feb. 1st, ,,	0·3 c.c. = 159,000,000														
	,, 9th, ,,	0·5 c.c. = 265,000,000	Feb. 1st, 1909.	+	+	+	+	+	–				1·25			
			,, 9th, ,,	+	+	+	+	+	+	+	±	–	5·8			
2	Jan. 24th, ,,	0·2 c.c. = 106,000,000	,, 16th, ,,	+	+	+	+	+	+	+	+	±	8·2	1½	Feb. 19th, 1909.	,,
	Feb. 1st, ,,	0·3 c c. = 159,000,000	,, 19th, ,,	+	+	+	+	+	+	+	+	±	8·9			
	,, 9th, ,,	0·5 c.c. = 265,000,000														
Two control rabbits.	*Nil.*	*Nil.*	,, 1st, ,,	+	±	–										
			,, 9th, ,,	+	±	–										
			,, 16th, ,,	+	±	–										
			,, 19th, ,,	+	±	–										

TABLE VI.—*Experiments on Guinea-pigs to Test the Immunising Properties of* Old Antityphoid Vaccine. *This Vaccine was prepared on Nov. 25th, 1906, from a 48 hours broth culture. It was sterilised by the addition of 0·5 per cent. carbolic acid. No heating used. It contained 420,000,000 bacilli per cubic centimetre.*

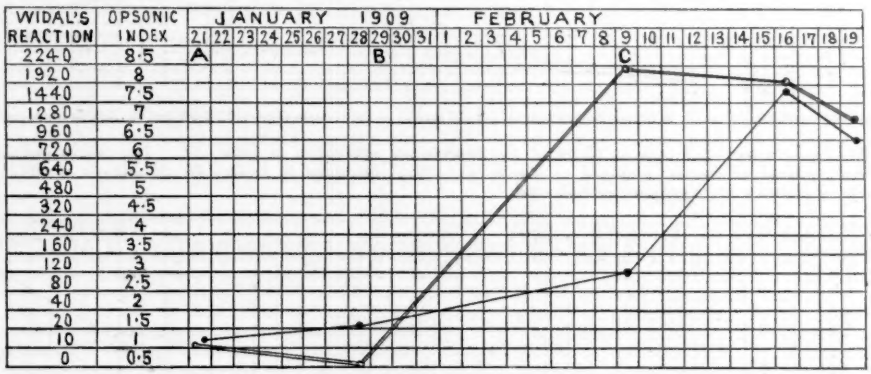
No. of experiment.	Date of injection of vaccine.	Quantity of vaccine used.	Date of examination of pooled sera.	Widal's reaction and dilutions used. 10	20	40	80	160	320	640	1280	2560	Opsonic index.	Effects of the intraperitoneal injection of a virulent strain of B. typhosus recently isolated from a case of typhoid fever. No. of doses lethal in 12 hours.	Date of intraperitoneal injection.	Result.
		Bacilli.														
1	Jan. 21st, 1909.	0·2 c.c. = 84,000,000												1	Feb. 18th, 1909.	Survived; was never ill.
	,, 29th, ,,	0·3 c.c. = 126,000,000														
	Feb. 9th, ,,	0·5 c.c. = 210,000,000	Jan. 28th, 1909.	+	+	–							0·64			
			Feb. 9th, ,,	+	+	+	+	±	–				8·2			
2	Jan. 21st, 1909.	0·2 c.c. = 84,000,000	,, 16th, ,,	+	+	+	+	+	+	+	+	±	8·4	1½	Feb. 19th, 1909.	,,
	,, 29th, ,,	0·3 c.c. = 126,000,000	,, 19th, ,,	+	+	+	+	+	+	+	±	–	7·5			
	Feb. 9th, ,,	0·5 c.c. = 210,000,000														
Two control guinea-pigs.	*Nil.*	*Nil.*	Jan. 28th, ,,	+	±	–										
			Feb. 9th, ,,	+	±	–										
			,, 16th, ,,	+	±	–										
			,, 19th, ,,	+	±	–										

CHART 1.—*Agglutination and Opsonic Chart of the Pooled Sera of the Experiments referred to in Table VI. Two guinea-pigs inoculated with an Old Antityphoid Vaccine, prepared on Nov. 25th, 1906, sterilised by the addition of 0·5 per cent. carbolic acid only.*



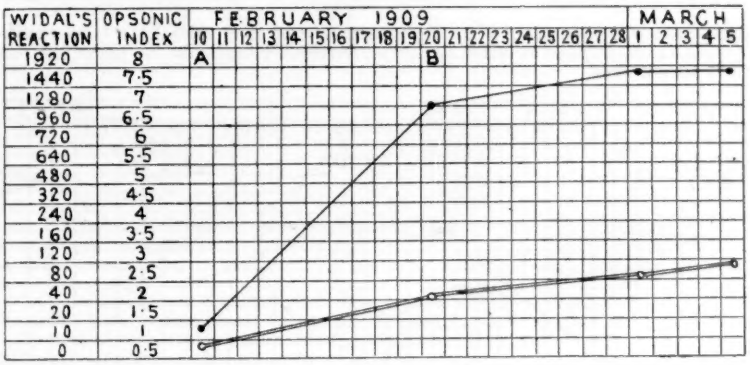
A, First inoculation 84,000,000 bacilli. B, Second inoculation 126,000,000 bacilli. C, Third inoculation 210,000,000 bacilli.
Double line = opsonic index.

CHART 2.—*Agglutination and Opsonic Chart of the Pooled Sera of the Experiments referred to in Table VII. Two guinea-pigs inoculated with Fresh Antityphoid Vaccine prepared on Dec. 21st, 1908. Sterilised by the addition of 0·5 per cent. carbolic acid only.*



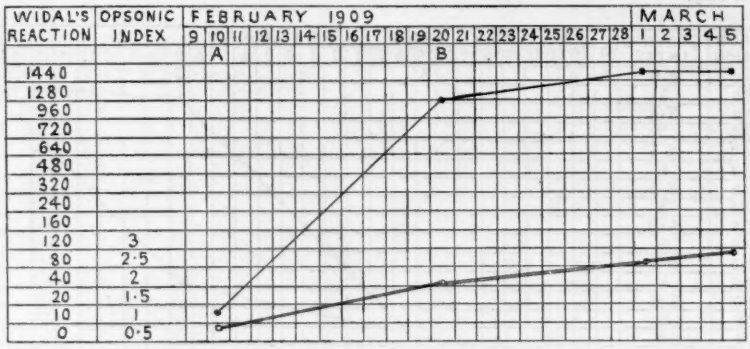
A, First inoculation 106,000,000 bacilli. B, Second inoculation 159,000,000 bacilli. C, Third inoculation 265,000,000 bacilli.
Double line = opsonic index.

CHART 3.—*Agglutination and Opsonic Chart of the Pooled Sera of Three Men Inoculated with an Old Antityphoid Vaccine prepared on Nov. 7th, 1906, sterilised by the addition of 0·5 per cent. carbolic acid only. (Referred to in Table VIII.)*



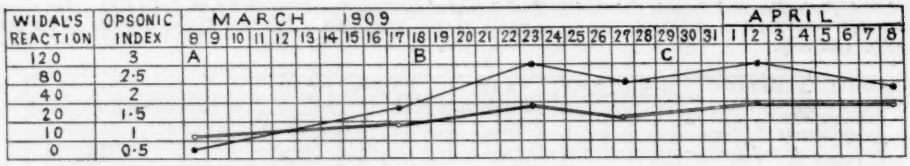
A, First inoculation 267,500,000 bacilli. B, Second inoculation 535,000,000 bacilli.
Double line = opsonic index.

CHART 4.—*Agglutination and Opsonic Chart of the Pooled Sera of Three Men Inoculated with a Fresh Antityphoid Vaccine prepared on Dec. 21st, 1908, sterilised by the addition of 0·5 per cent. carbolic acid only. (Referred to in Table IX.)*



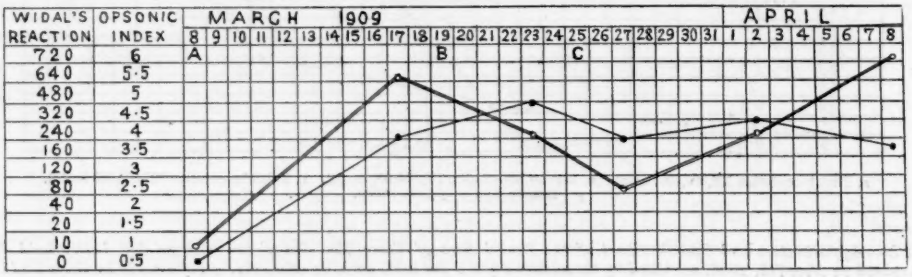
A, First inoculation 265,000,000 bacilli. B, Second inoculation 530,000,000 bacilli. Double line = opsonic index.

CHART 5.—*Agglutination and Opsonic Chart of the Experiments referred to in Table X. Two rabbits inoculated with an Old Antityphoid Vaccine prepared Nov. 24th, 1906. Sterilised by heating for 20 minutes at 60° C. and the subsequent addition of 0·5 per cent. carbolic acid.*



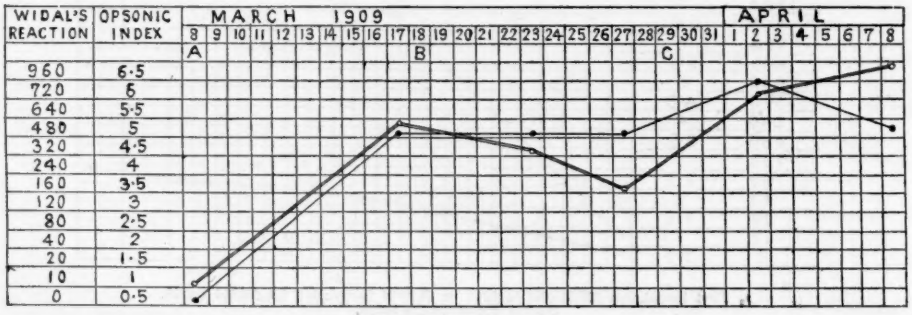
A, First inoculation 84,000,000 bacilli. B, Second inoculation 126,000,000 bacilli. C, Third inoculation 210,000,000 bacilli. Double line=opsonic index.

CHART 6.—*Agglutination and Opsonic Chart of the Experiments referred to in Table XI. Two rabbits inoculated with a Fresh Antityphoid Vaccine prepared on March 7th, 1909. Sterilised by heating for 20 minutes at 60° C. and the subsequent addition of 0·5 per cent. carbolic acid.*



A, First inoculation 84,000,000 bacilli. B, Second inoculation 126,000,000 bacilli. C, Third inoculation 210,000,000 bacilli. Double line=opsonic index

CHART 7.—*Agglutination and Opsonic Chart of the Experiments referred to in Table XIII. Two rabbits inoculated with a Fresh Antityphoid Vaccine prepared on March 7th, 1909. Sterilised by heating for one hour at 53° C. and the subsequent addition of 0·25 per cent. lysol.*



A, First inoculation 84,000,000 bacilli. B Second inoculation 126,000,000 bacilli. C, Third inoculation 210,000,000 bacilli. Double line=opsonic index.

serum was pooled (with the exception of the experiments recorded in Tables I. and XIII., where only one animal was used) and diluted 1 in 5, then filled into glass pipettes and heated in a water bath for 15 minutes at a temperature of 58° C. We found that more accurate estimations could be obtained by using the serum diluted to this extent than by using an undiluted serum. Two volumes of the diluted and heated serum were added to 2 volumes of washed corpuscles and 1 volume of B. typhosus emulsion, then carefully mixed and filled into glass pipettes and incubated at 37° C. for 15 minutes. When taken out of the incubator the contents of the pipettes were again mixed and films prepared and stained in the usual way, and 50 polymorphonuclear corpuscles were counted. In addition to these blood tests, the rabbits and guinea-pigs inoculated were subjected to a further and much more exacting test of immunity—viz., the intraperitoneal injection of lethal doses (lethal in 12 hours) of living typhoid bacilli recently isolated from the blood of a patient suffering from typhoid fever. The test culture used was a broth culture grown at a temperature of 37° C. for 24 hours. Of this culture 5 cubic centimetres given intraperitoneally killed the control rabbits in 12 hours, and 0·75 cubic centimetre the control guinea-pigs in from 12 to 14 hours. It will be seen that the animals immunised with the vaccines (old and fresh) sterilised by the addition of 0·5 per cent. carbolic acid and without the aid of heat were able to survive one and a half lethal doses of the test typhoid culture given intraperitoneally without showing any apparent symptoms, but that none of them were able to withstand two lethal doses.

TABLE VII.—*Experiments on Guinea-pigs to Test the Immunising Properties of* Fresh Antityphoid Vaccine. *This vaccine was prepared on Dec. 21st, 1908, from a 48 hours broth culture. It was sterilised by the addition of 0·5 per cent. carbolic acid. No heating employed. It contained 530,000,000 bacilli per cubic centimetre.*

No. of experiment.	Date of injection of vaccine.	Quantity of vaccine used.	Date of examination of pooled sera.	Widal's reaction and dilutions used. 10	20	40	80	160	320	640	1280	2560	Opsonic index.	Effects of the intraperitoneal injection of a virulent strain of B. typhosus recently isolated from a case of typhoid fever. No. of doses lethal in 12 hours.	Date of intraperitoneal injection.	Result.
		Bacilli.														
1	Jan. 21st, 1909.	0·2 c.c. = 106,000,000												1	Feb. 18th, 1909.	Survived; was never ill
	,, 29th, ,,	0·3 c.c. = 159,000,000														
	Feb. 9th, ,,	0·5 c.c. = 265,000,000	Jan. 28th, 1909.	+	+	−							0·66			
2	Jan. 21st, ,,	0·2 c.c. = 106,000,000	Feb. 9th, ,,	+	+	+	+	±	−				8·5	1½	Feb. 19th, 1909.	,,
	,, 29th, ,,	0·3 c.c. = 159,000,000	,, 16th, ,,	+	+	+	+	+	+	+	±		8·1			
	Feb. 9th, ,,	0·5 c.c. = 265,000,000	,, 19th, ,,	+	+	+	+	+	+	±	−		7·5			
Two control guinea-pigs.	*Nil.*	*Nil.*	Jan. 28th, ,,	+	±	−										
			Feb. 9th, ,,	+	±	−										
			,, 16th, ,,	+	±	−										
			,, 19th, ,,	+	±	−										

TABLE VIII.—*Showing the Result of Widal's Reaction and Opsonic Tests carried out with the Pooled Sera of Three Men Inoculated with an* Old Antityphoid Vaccine. *This vaccine was prepared on Nov. 7th, 1906, from a 48 hours broth culture. It was sterilised by the addition of 0·5 per cent. carbolic acid. No heat employed. It contained 535,000,000 bacilli per cubic centimetre.*

Name.	Date of inoculation of vaccine.	Quantity of vaccine used.	Date of examination of pooled sera.	Agglutination response of serum and dilutions used. 10	20	40	80	160	320	640	1280	2560	Opsonic index.
W. A. P.	Feb. 10th, 1909.	0·5 c.c. = 267,500,000 bacilli	Feb. 10th. Before inoculation.	+	±	−							0·9
	,, 20th, ,,	1·0 c.c. = 535,000,000 ,,	,, 20th. 10 days after first inoculation.	+	+	+	+	+	+	+	+	−	2·1
L. T.	,, 10th, ,,	0·5 c.c. = 267,500,000 ,,	March 1st. 9 days after second inoculation.	+	+	+	+	+	+	+	+	±	2·5
	,, 20th, ,,	1·0 c.c. = 535,000,000 ,,											
H. B.	,, 10th, ,,	0·5 c.c. = 267,500,000 ,,	,, 5th. 13 days after second inoculation.	+	+	+	+	+	+	+	+	±	2·8
	,, 20th, ,,	1·0 c.c. = 535,000,000 ,,											

TABLE IX.—*Showing the Result of Widal's Reaction and Opsonic Tests carried out with the Pooled Sera of Three Men Inoculated with a* Fresh Antityphoid Vaccine. *This vaccine was prepared on Dec. 21st, 1908, from a 48 hours broth culture. It was sterilised by the addition of 0·5 per cent. carbolic acid. No heat employed. It contained 530,000,000 bacilli per cubic centimetre.*

Name.	Date of inoculation of vaccine.	Quantity of vaccine used.	Date of examination of pooled sera.	Agglutination response of serum and dilutions used. 10	20	40	80	160	320	640	1280	2560	Opsonic index.
A. H.	Feb. 10th, 1909.	0·5 c.c. = 265,000,000 bacilli	Feb. 10th. Before inoculation.	+	±	−							0·9
	,, 20th, ,,	1·0 c.c. = 530,000,000 ,,	,, 20th. 10 days after first inoculation.	+	+	+	+	+	+	+	+	−	2·2
J. C. B.	,, 10th, ,,	0·5 c.c. = 265,000,000 ,,	March 1st. 9 days after second inoculation.	+	+	+	+	+	+	+	+	±	2·56
	,, 20th, ,,	1·0 c.c. = 530,000,000 ,,											
F. C. C.	,, 10th, ,,	0·5 c.c. = 265,000,000 ,,	,, 5th. 13 days after second inoculation.	+	+	+	+	+	+	+	+	±	3·0
	,, 20th, ,,	1·0 c.c. = 530,000,000 ,,											

On reference to the opsonic and agglutination tables numbered I. to VII. (inclusive) and Charts 1 and 2 it will be seen that the opsonins and agglutinins are increased to practically the same extent whether we use a vaccine over two years old or a vaccine freshly prepared, provided that in both cases sterilisation has been carried out by means of carbolic acid only.

It is evident from these results and also from the results recorded in the Tables numbered VIII. and IX. and Charts 3 and 4 that an antityphoid vaccine sterilised by the addition of 0·5 per cent. carbolic acid and without any degree of immunity, is not quite so efficient as an unheated vaccine.

Table XIII. and its accompanying chart (No. 7) demonstrate that a vaccine sterilised by heating for one hour at a temperature of 53° C., and the subsequent addition of 0·25 per cent. lysol (Leishman's method), produces a slightly higher response (as judged by the blood changes, but not by the effects of lethal doses) than a freshly prepared vaccine sterilised by heating for 20 minutes at 60° C., and the subsequent addition of 0·5 per cent. carbolic acid. Leishman,[2] however, states that the keeping properties of a vaccine

TABLE X.—*Experiments on Rabbits to Test the Immunising Properties of an* Old Antityphoid Vaccine. *This vaccine was prepared on Nov. 24th, 1906, from a 48 hours broth culture. It was sterilised by heating for 20 minutes at 60° C. and the subsequent addition of 0·5 per cent. carbolic acid. It contained 420,000,000 bacilli per cubic centimetre.*

No. of experiment.	Date of injection of vaccine.	Quantity of vaccine used.	Date of examination of pooled sera.	Widal's reaction and dilutions used.									Opsonic index.	Effects of the intraperitoneal injection of a virulent strain of B. typhosus recently isolated from a case of typhoid fever.		
				10	20	40	80	160	320	640	1280	2560		No. of doses lethal in 12 hours.	Date of intraperitoneal injection.	Result.
1	March 8th, 1909.	84,000,000 bacilli.	March 8th, 1909, before inoculation.	±	-								1·0	1	April 12th, 1909.	Died April 13th.
	,, 18th, ,,	126,000,000 ,,	March 17th, 1909.	+	+	±							1·33			
	,, 29th, ,,	210,000,000 ,,	,, 23rd, ,,	+	+	+	+	±					1·8			
2	,, 8th, ,,	84,000,000 ,,	,, 27th, ,,	+	+	+	+	-					1·2	1½	April 14th, 1909.	Died April 15th.
	,, 18th, ,,	126,000,000 ,,	April 2nd, ,,	+	+	+	+	±					1·9			
	,, 29th, ,,	210,000,000 ,,	,, 8th, ,,	+	+	+	±						1·7			
Two control rabbits.			March 8th, ,,	±	-											
			,, 17th, ,,	±	-											
			,, 23rd, ,,	±	-											
			,, 27th, ,,	±	-											
			April 2nd, ,,	±	-											
			,, 8th, ,,	±	-											

TABLE XI.—*Experiments on Rabbits to Test the Immunising Properties of* Fresh Antityphoid Vaccine. *This vaccine was prepared on March 7th, 1909, from a 48 hours broth culture. It was sterilised by heating for 20 minutes at a temperature of 60° C. and the subsequent addition of 0·5 per cent. carbolic acid. It contained 500,000,000 bacilli per cubic centimetre.*

No. of experiment.	Date of injection of vaccine.	Quantity of vaccine used.	Date of examination of pooled sera.	Widal's reaction and dilutions used.									Opsonic index.	Effects of the intraperitoneal injection of a virulent strain of B. typhosus recently isolated from a case of typhoid fever.		
				10	20	40	80	160	320	640	1280	2560		No. of doses lethal in 12 hours.	Date of intraperitoneal injection.	Result.
1	March 8th, 1909.	84,000,000 bacilli.	March 8th, 1909, before inoculation.	±	-								1·0	1	April 12th, 1909.	Survived; was never ill.
	,, 18th, ,,	126,000,000 ,,	March 17th, 1909.	+	+	+	+	+	±				5·66			
	,, 29th, ,,	210,000,000 ,,	,, 23rd, ,,	+	+	+	+	+	+	±			4·0			
2	,, 8th, ,,	84,000,000 ,,	,, 27th, ,,	+	+	+	+	+	+	-			2·6	1½	April 14th, 1909.	Died April 17th.
	,, 18th, ,,	126,000,000 ,,	April 2nd, ,,	+	+	+	+	+	+	-			4·6			
	,, 29th, ,,	210,000,000 ,,	,, 8th, ,,	+	+	+	+	+	±				6·0			
Two control rabbits.			March 8th, ,,	±	-											
			,, 17th, ,,	±	-											
			,, 23rd, ,,	±	-											
			,, 27th, ,,	±	-											
			April 2nd, ,,	±	-											
			,, 8th, ,,	±	-											

previous heating retains its immunising properties unimpaired for a period of two years at least. In the Tables numbered X., XI., XII., and Charts 5 and 6, where a comparison is drawn between old and freshly prepared vaccines sterilised by means of a double process, viz., heating to 60° C. for 20 minutes, and the subsequent addition of 0·5 per cent. carbolic acid, it will be seen that the heated and carbolised vaccine has lost considerably in its immunising properties after two years, but that a fresh vaccine similarly prepared, although evidently efficient in producing a high degree of immunity, is not quite so efficient as an unheated vaccine.

Table XIII. and its accompanying chart (No. 7) demonstrate that a vaccine sterilised by heating for one hour at a temperature of 53° C., and the subsequent addition of 0·25 per cent. lysol (Leishman's method), produces a slightly higher response (as judged by the blood changes, but not by the effects of lethal doses) than a freshly prepared vaccine sterilised by heating for 20 minutes at 60° C., and the subsequent addition of 0·5 per cent. carbolic acid. Leishman,[2] however, states that the keeping properties of a vaccine prepared by this method cannot be relied upon for longer than three months. We are unable for the present to make any experiments on this point on account of not having an old vaccine sterilised by this method.

None of the rabbits immunised with a heated vaccine were able to survive the intraperitoneal inoculation of one and a half lethal doses of the test typhoid culture, but those

[2] Leishman, Harrison Grattan, Webb, and Kennedy: Journal of the R.A.M.C., October, 1908.

immunised with a freshly prepared heated vaccine survived one lethal dose. When an old heated vaccine was used one lethal dose of the test culture proved fatal in one case but not in a second animal similarly immunised.

It would appear from these experiments that sterilising a vaccine by means of heat diminishes its immunising properties, even though the vaccine be used when quite fresh, and it would also appear that heat has a marked effect in curtailing its keeping properties. On the other hand, when sterilisation is carried out by adding 0·5 per cent. carbolic acid only, no harmful effects are produced, and the vaccine retains its properties unimpaired for two years at least.

It may be mentioned that one of us (D. S.) has prepared and used a staphylococcus vaccine, sterilised by the addition of 0·5 per cent. carbolic acid only, and with results in every way satisfactory. In dispensing with the aid of heat in sterilising a staphylococcus vaccine it would be safer to allow 48 hours to elapse before testing for sterility. Experience has proved that some strains of staphylococci resist 0·5 per cent. carbolic acid longer than typhoid bacilli. The principle here enunciated would apply to all bacterial vaccines now in use. In the case of vaccines prepared from bacteria associated with septicæmic diseases, such as plague and some cases of streptococcus infections, the carbolic acid could be increased even up to 1 per cent. without producing any harmful effects either to the patient or the vaccine, but as a matter of fact considerably less than 1 per cent. would suffice.

TABLE XII.—*Experiments on Rabbits to Test the Immunising Properties of an* Old Antityphoid Vaccine. *This vaccine was prepared on Nov. 24th, 1906, from a 48 hours broth culture. It was sterilised by heating for 20 minutes at 60° C. and the subsequent addition of 0·5 per cent. carbolic acid. It contained 420,000,000 bacilli per cubic centimetre.*

No. of experiment.	Date of injection of vaccine.	Quantity of vaccine used.	Date of examination of serum.	Widal's reaction and dilutions used.										Opsonic index.	Effects of the intraperitoneal injection of a virulent strain of B. typhosus recently isolated from a case of typhoid fever.		
				10	20	40	80	160	320	640	1280	2560			No. of doses lethal in 12 hours.	Date of intraperitoneal injection.	Result.
1	April 5th, 1909.	84,000,000 bacilli.	April 11th, 1909.	+	+	-								1	1	May 10th, 1909.	Survived, was not ill.
	,, 15th, ,,	126,000,000 ,,	,, 15th, ,,	+	+	+								1·4			
	,, 25th, ,,	210,000,000 ,,	,, 22nd, ,,	+	+	+	+	±						1·5			
			,, 25th, ,,	+	+	+	+	-						1·7			
			May 4th, ,,	+	+	+	+	+	±					2·5			
			,, 7th, ,,	+	+	+	+	+	-								
Control rabbit.			April 11th, ,,	±	-												
			,, 15th, ,,	±	-												
			,, 22nd, ,,	±	-												
			,, 25th, ,,	±	-												
			May 4th, ,,	±	-												
			,, 7th, ,,	±	-												

TABLE XIII.—*Experiments on Rabbits to Test the Immunising Properties of* Fresh Antityphoid Vaccine. *This vaccine was prepared on March 7th, 1909, from a 48 hours broth culture. It was sterilised by heating for one hour at 53° C. and the subsequent addition of 0·25 per cent. lysol. It contained 500,000,000 bacilli per cubic centimetre.*

No. of experiment.	Date of injection of vaccine.	Quantity of vaccine used.	Date of examination of pooled sera.	Widal's reaction and dilutions used.									Opsonic index.	Effects of the intraperitoneal injection of a virulent strain of B. typhosus recently isolated from a case of typhoid fever.		
				10	20	40	80	160	320	640	1280	2560		No. of doses lethal in 12 hours.	Date of intraperitoneal injection.	Result.
1	March 8th, 1009.	84,000,000 bacilli.	March 8th, 1909, before inoculation.	±	-								1·0	1	April 12th, 1909.	Survived; was never ill.
	,, 18th, ,,	126,000,000 ,,	March 17th, 1909.	+	+	+	+	+	+	±			5·5			
	,, 29th, ,,	210,000,000 ,,	,, 23rd, ,,	+	+	+	+	+	+	±			4·6			
2	,, 8th, ,,	84,000,000 ,,	,, 27th, ,,	+	+	+	+	+	+	±			3·4	1½	April 14th, 1909.	Died April 15th.
	,, 18th, ,,	126,000,000 ,,	April 2nd, ,,	+	+	+	+	+	+	+	±		6·8			
	,, 29th, ,,	210,000,000 ,,	,, 8th, ,,	+	+	+	+	+	+	±			6·7			
Two control rabbits.			March 8th, ,,	±	-											
			,, 17th, ,,	±	-											
			,, 23rd, ,,	±	-											
			,, 27th, ,,	±	-											
			April 2nd, ,,	±	-											
			,, 8th, ,,	±	-											

Conclusions.

I. The sterilisation of antityphoid vaccine can be efficiently accomplished by the addition of 0·5 per cent. carbolic acid.

II. Heating a vaccine in order to sterilise it introduces a harmful and unnecessary element which acts in two ways: (1) it diminishes its immunising properties, and (2) it curtails its keeping properties. In the experiments here recorded the deleterious effects of heat are clearly shown.

III. Antityphoid vaccine sterilised by the addition of 0·5 per cent. carbolic acid retains its immunising properties unimpaired for two years at least. This is proved (1) by the

fact that animals and men treated with a two years old vaccine prepared by this method show the same blood changes as those treated with a fresh vaccine similarly prepared; and (2) by the fact that animals treated with a two years old vaccine prepared by this method withstand the same amount of a virulent typhoid culture when given intraperitoneally as those treated with a fresh vaccine similarly prepared.

IV. Animals inoculated with antityphoid vaccine sterilised by the addition of 0·5 per cent. carbolic acid attain a higher degree of immunity (as proved by blood changes and the resistance to lethal doses of a virulent typhoid culture) than similar animals inoculated with a vaccine sterilised by heat (60° C. for 20 minutes, or 53° C. for one hour) and the subsequent addition of an antiseptic (carbolic acid 0·5 per cent., or lysol 0·25 per cent.).

V. An antityphoid vaccine sterilised by heating for 20 minutes at a temperature of 60° C., and the subsequent addition of 0·5 per cent. carbolic acid has considerably deteriorated after being kept for two years, as proved by the blood changes, and effects of lethal doses of a virulent typhoid culture in animals inoculated with this vaccine.

VI. Pure carbolic acid to the extent of 0·5 per cent. appears to us to be the best agent with which to sterilise bacterial vaccines, and its general adoption would obviate any necessity for heating.

CONGENITAL, HEREDITARY, AND FAMILY HÆMATURIA.

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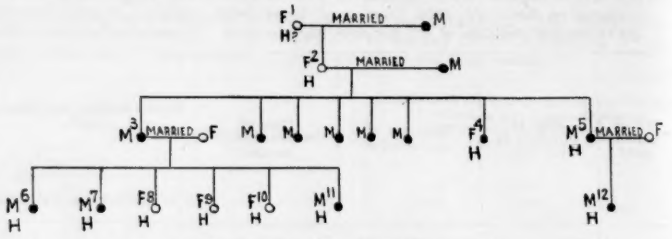
HEREDITARY hæmaturia appears to be a very rare condition. It was first described by Guthrie[1] in 1902 in a paper entitled "'Idiopathic,' or Congenital, Hereditary and Family Hæmaturia," in which he reported its occurrence in 12 members of one family. I have not been able to find any other reference to it in the literature. Atlee,[2] however, has reported "Three Cases of Recurrent Hæmaturia in One Family," which resemble very closely the cases under consideration, but in which there is no hereditary or congenital history.

The seven cases which are reported below are of one family which has been under my observation during the past seven years. So far as the history goes, the family is comprised in all of 17 persons, of whom 10 have suffered from hæmaturia. Testimony is conflicting as to whether the great-grandmother (No. 1 in the accompanying chart) had hæmaturia or not. She died at an advanced age from "senile decay" with dropsy. The great-grandfather was healthy. Their only child, a daughter (No. 2), had hæmaturia (according to the relatives), married, and had eight children (seven sons and one daughter), and died, aged 38 years, from "Addison's disease." Four of her sons died in infancy from an unknown cause; and one, aged 14 years, from an indefinite "brain trouble." There is no evidence of any of those having suffered from hæmaturia. The remaining three are alive. The eldest son, aged 31 years (No. 3), has not had hæmaturia, but his six children have all been hæmaturic; the second son (No. 5), aged 28 years, has suffered from hæmaturia, and his only child, aged 2 years, is also hæmaturic; and the daughter, aged 23 years (No. 4), unmarried, has hæmaturia. There is no history of hæmophilia, nor is there any rheumatic tendency in the family.

It is interesting to note that in this family the hæmaturia has been inherited, first, through the female side, and then on two occasions through the male side, in one case the transmitting male not being affected. In Guthrie's family inheritance was only through the females; and in Atlee's cases, though there is no reference to heredity, it is noted that the father died from uræmia.

The cases which have been under my observation are the granddaughter (No. 4) and the grandson's (No. 3) six children—i.e., the second and third affected generations. Four of the children, aged respectively 9, 5½, and 3½ years, and 11 months, are alive, and two are dead, one having died, aged 3 years, from acute nephritis with uræmia, and one aged 10 days, from broncho-pneumonia. All have suffered from hæmaturia. Their father is a strong healthy man, who has never had any illness, and the mother has had good health except for a transient hemiplegia following phlegmasia after childbirth. The following chart shows the relationships:—



H = Suffered from hæmaturia.

Guthrie based the diagnosis of his cases on the following points: the personal and family history, the occurrence of febrile exacerbations in which the hæmaturia far exceeds that of acute nephritis, the absence of œdema or dropsy and cardio-vascular changes, and the absence of all the well-known causes of hæmaturia, and my cases agree very closely with his description.

In all the six children the condition has probably been congenital. Two of them were noticed to pass blood-coloured urine during the first week of life; in three, blood was first observed at from 12 to 18 months, when the napkins were dispensed with; and in the sixth (aged 11 months), though to the eye the urine had a normal appearance, albumin was present and blood corpuscles microscopically in the first specimen obtained (at four months). In practically all the examinations I have made of these urines over a number of years blood has been present, usually giving the urine either a faint "smoky" or light red colour, with albumin often in excess of the blood. The children are also, with one exception, all subject to periodic febrile attacks occurring at irregular intervals, during which the quantity of blood passed is much increased. These attacks have always been attributed to catching cold or to digestive disturbance, though they sometimes occur without very evident cause. Any trifling cold, nasal or bronchial, is invariably followed by an attack, but diet has no such constant effect, though in three of the children the eating of vegetables or apples has very regularly produced it. Rhubarb,[3] black currants, strawberries,[4] &c., which have been reported as occasionally causing hæmaturia, have never given rise to an attack.

The exacerbation sets in suddenly, the child is feverish for a day or two and usually confined to bed, there is frequency of micturition, and sometimes enuresis, but never any complaint of pain. The child is well again by the third day as a rule, though occasionally the indisposition lasts from one to two weeks, or may be so slight that the child never misses school. During the attack the quantity of blood passed increases for a few days and then gradually lessens, and the urine regains its normal appearance by the end of the second or third week. Any general disturbance of the health at this time has invariably had the effect of prolonging the attack and increasing the quantity of blood (e.g., measles, whooping-cough, bronchitis), but exercise has no effect in this way, and the attacks are not more frequent or prolonged at one season than another. The quantity of urine passed daily in an attack is normal; the specific gravity is from 1015 to 1030, and the reaction neutral or acid. Albumin varies from 0·05 to 0·5 Esbach (to ¼ volume on boiling), and is in accordance with the blood present. The deposit, which is slight, contains many red blood corpuscles, abundant blood casts, an occasional hyaline cast, but no others; usually a few crystals of uric acid or of oxalates,

[1] L. G. Guthrie: THE LANCET, May 3rd, 1902, p. 1243.
[2] St. Bartholomew's Hospital Journal, 1901.
[3] F. D. Boyd: THE LANCET, Oct. 24th, 1891, p. 927.
[4] L. G. Guthrie: THE LANCET, May 3rd, 1902, p. 1245.

and granular matter. There has never been œdema or dropsy at any time in any of the cases, nor pain on micturition, nor renal tenderness. The heart and vessels appear normal in all. None of them have suffered from scarlet fever, or rheumatism, or from gravel; and they have never shown any symptoms of scurvy, purpura, or Raynaud's disease. There is no history of other hæmorrhage in any of the cases. The other ordinary causes of hæmaturia (calculus, tubercle, syphilis, neoplasm, &c.) can be excluded.

CASE 1.—A male, aged nine years, has been under observation since 1901, and at that time he was a healthy infant. Blood was first noticed in the urine by his mother at 12 months, but it was not looked for before that time, as the parents had no suspicion of the family nature of the trouble, and no attention was paid to it. I was consulted on account of enuresis and frequency of micturition at the age of two years, and at that time blood was found present in the urine at every examination, both during the exacerbation and in the intervals. Indisposition at the onset was slight. Since then he has had attacks at irregular intervals, the longest being two months. Those attacks are usually preceded by slight cough or nose-running, less frequently by headache, but sometimes begin without any distinct symptom. The onset is sudden, with slight pyrexia (99° to 101° F.), furred tongue, loss of appetite, and frequency of micturition, but no enuresis. The first urine passed is of a decided blood colour, but the child makes no complaint whatever. The indisposition lasts from 24 to 48 hours, but he has seldom been confined to bed, and usually attends school. On the second or third day he is quite well again, though the urine becomes deeper in colour for a few days, then gradually clears up and regains its normal appearance in about a fortnight. At the height of the attack the urine is blood red in colour, neutral or acid in reaction, the specific gravity is from 1020 to 1026, and the quantity passed is normal. There is little deposit. Albumin varies from 0·3 to 0·5 Esbach ($\frac{1}{3}$ to $\frac{1}{2}$ volume). Microscopically there are many blood corpuscles and blood casts, sometimes crystals of uric acid, and granular matter. In the intervals there is always blood present, giving the urine a slight "smoky" appearance; the albumin varies from 0·2 to 0·4 Esbach, and deposit contains red blood corpuscles and fragments of blood casts. The albumin is usually in excess of the blood. Neither during the attack nor in the intervals is blood or albumin affected by posture or exercise, and the attacks are as frequent in summer as in winter. No article of diet particularly disagrees with him. During the past year he had whooping-cough and measles, and in the course of those troubles the attacks were much prolonged and the amount of blood in the urine increased. He is pale and somewhat undersized, but the mucous membranes are well coloured, and he has had no other illness. Examination reveals no abnormality. The heart and vessels appear normal and the kidneys are not palpable. The fundus oculi is normal. Blood (two weeks after attack): hæmoglobin, 95 per cent.; red corpuscles, 4,900,000 per cubic millimetre; white corpuscles, 10,000 per cubic millimetre; lymphocytes, 40 per cent.; and polymorphonuclears, 52 per cent.

CASES 2 & 3.—Two females (twins), aged five and a half years, have been under observation since birth, and urine has been examined very frequently since symptoms first appeared. The mother observed blood in the urine for the first time when the napkins were dispensed with at the age of 18 months. The children were difficult to rear, suffering frequently from digestive disturbance, and have always been considered delicate since. They suffered from rickets when two years old, and have had bronchitis, measles, and whooping-cough since, but no other illness. From the age of 18 months attacks similar to the brother's have been of constant occurrence, lasting from two to four weeks and recurring every six or eight weeks. During the intervals the mother says the urine is perfectly clear, though at my examination blood has always been evident to the eye; albumin present from 0·05 to 0·1 Esbach (or $\frac{1}{10}$ volume) sometimes in excess of the blood, and blood corpuscles seen under the microscope. The attacks are usually preceded by nose-running, sore-throat, or cough, but occasionally appear to follow the eating of vegetables or apples. There is frequently vomiting and occasionally diarrhœa at the onset, and the indisposition is greater and lasts longer than with the boy, the twins being confined to bed for some days, during which there are slight pyrexia and loss of appetite. They suffer from frequency of micturition throughout the attack, but never complain of pain, and at no time has there been any œdema. Both have suffered from enuresis since infancy and therefore the quantity of urine passed daily could not be ascertained. During the attack the reaction is acid, the specific gravity is from 1018 to 1030, and the albumin measures 0·05 to 0·2 Esbach (or $\frac{1}{5}$ volume). The deposit is slight and contains many blood corpuscles and blood casts, an occasional hyaline cast, and some crystals of uric acid or of oxalates. They are fragile-looking children. Both have rachitic chests and heads. The heart and blood-vessels are normal and the kidneys are not palpable. The fundus oculi is normal. Blood (a week after attack): hæmoglobin, 75 per cent.; red corpuscles, 4,120,000 per cubic millimetre; white corpuscles, 8500 per cubic millimetre; lymphocytes, 45 per cent.; and polymorphonuclears, 53 per cent.

CASE 4.—A female, aged three and a half years, was a healthy infant, but from the earliest the mother noticed that she occasionally passed blood in the urine which stained the napkins. When I first attended her she was a year old and was suffering from rickets. At that time she had the attacks in every respect like the other children; and during the attacks the urine contained abundant blood corpuscles and blood casts, and in the intervals a trace of blood and albumin was always present. Since then her health has been fairly good. In April, 1908, she suffered from measles with extensive bronchitis, and had a very widespread hæmorrhagic eruption. The temperature was elevated for three weeks, and during this time the urine had the appearance of pure blood and the deposit contained very abundant blood casts. There has been no attack since, and the urine, frequently examined, has been free from blood and albumin. The attacks were always accompanied by vomiting and digestive disturbance and were attributed to cold or to diet (apples, as in Cases 2 and 3). Since April, 1908, she has had no digestive disturbance though on a varied diet. She is a bright, healthy looking girl. The heart, vessels, and fundus are normal.

CASE 5.—A male, born in 1902, who was a healthy looking child. During the first week he passed blood in the urine frequently, though I could not obtain a specimen for examination. He died on the tenth day from broncho-pneumonia.

CASE 6.—A male, aged 11 months. Since birth the mother has watched carefully, but has seen no sign of hæmaturia. The first specimen of urine I obtained was at four months. To the eye this presented a normal appearance, but contained a distinct trace of albumin, was acid in reaction, and under the microscope a few blood corpuscles were found, but no casts. Subsequent examinations have given the same result, and so far there has been no distinct exacerbation, although the quantity of blood present varies. The child seems otherwise healthy.

CASE 7.—A female, aged 23 years, who has been under observation at short intervals for about a year. I have never seen her in an attack, but from her description it appears to be exactly like those of the children in onset and duration. She was first aware of the hæmaturia at the age of 18 years, when she had an attack during an illness, but admits that she may have had it for years before. Since that time the exacerbations have recurred every two or three months. The attack, attributed to catching cold, is usually preceded by chilliness, and pain in the back and limbs, and she suffers from frequency of micturition during its course. All articles of diet agree with her. Menstruation neither lessens nor aggravates the hæmaturia. She has never had hæmorrhage from any other organ. Six months ago she was curetted for endometritis, and the amount of blood lost was normal; a week later, while still confined to bed, she had an exacerbation of the usual type. She has had no other illness. The heart, vessels, and fundus are normal. The urine, which has been examined frequently, but only in the intervals, is slightly "smoky" in appearance and of acid reaction; the specific gravity is from 1015 to 1020, albumin 0·05 to 0·1 Esbach, and microscopically blood corpuscles and a few blood casts are present. Blood (two weeks after attack): hæmoglobin, 70 per cent.; red corpuscles, 4,323,000 per cubic millimetre; white corpuscles, 7200 per cubic millimetre; lymphocytes, 37 per cent.; and polymorphonuclears, 57 per cent.

Of the other affected members of the family—i.e., of the younger grandson (No. 5 on the chart), aged 28 years, and his son, aged two years—I have no personal knowledge. From his medical adviser I learn that he has attended the elder during an attack of hæmaturia like those already described, and since the condition of the other members of the family became known the relatives have observed typical attacks in the child.

There is no doubt that these cases are of the same nature as those described by Guthrie in the paper already referred to. He reported a family of 15 persons of two generations, of which 12 members suffered from hæmaturia. Of the first generation (five persons) two males and two females were affected and one female unaffected. The males died, aged respectively $4\frac{1}{2}$ and 11 years, from unknown causes; the two affected females married and had families. The elder had seven children, of whom five suffered from hæmaturia (four females aged 18, 15, 13, and 10 years, and one male aged six years); the younger had three children, (two males aged eight and three years, and one female aged 11 years), all affected. The attacks in these cases were usually attributed to catching cold and were associated with slight bronchial catarrh, or with earache, toothache, or tonsillitis. In some, certain articles of diet seemed to provoke an attack (claret, black currants, asparagus, strawberries). The hæmaturia seemed to produce no ill effects in any of them.

The three cases of recurrent hæmaturia in one family described by Atlee are referred to by Guthrie, who considers them of the same nature as his own, despite the absence of a hereditary or congenital history. They were three females, aged $5\frac{1}{2}$, $4\frac{1}{2}$, and $2\frac{1}{2}$ years, one of whom had four attacks in nine months.

Although the hæmaturia may persist for years without materially affecting the health, beyond causing a slight degree of anæmia after a prolonged attack, yet none of my patients could be called robust. In only one of these seven cases has the hæmaturia disappeared, and since then the child's general condition has noticeably improved.

Remarking on the prognosis of these cases, Guthrie says, "the condition does not seem to endanger life, or even health, as a general rule." On the other hand, the father of Atlee's three family cases died from uræmia, and although there is no history of his having suffered from hæmaturia the association is suggestive. One of my own cases, a female, aged five years, died from acute nephritis with uræmia, and this in itself has necessitated a very guarded prognosis for the other members of the family. The report of this case is of interest, as the nephritis developed during an exacerbation of the hæmaturia.

The patient was one of the twins (Cases 2 and 3). About the middle of October, 1908, an attack of hæmaturia began in the usual way. She was confined to bed for a few days and by the end of the month she was quite well again, though the urine was still "red." A week afterwards (Nov. 7th) the child ate heartily, partaking of vegetables and apples (both of which usually disagreed with her), and later sickened, vomited, and had a convulsion. The vomited material and stools contained undigested food.

The urine examined on the day following was blood-red in colour, acid, of specific gravity 1030, and albumin measured 0·1 Esbach (⅓ volume). The deposit contained many blood corpuscles, blood casts, and some crystals of oxalates. Under treatment there were no further convulsions, though on the next day there was marked carpo-pedal spasm; the temperature was 101° F. and the tongue was very white and dirty. On the 9th the temperature was normal and on the 10th the child was running about apparently well. On the 14th I was called to see her again. She had been in bed for two days, taking only milk; the temperature was 100°, the tongue was furred, and the bowels were constipated. She had a cough, and sibilant râles were present all over the lungs. There was no change in the urine on examination. She became gradually worse, and on the 18th complained of headache; the temperature was 100°, the tongue was dirty, and the motions were foul smelling. On the next day she was extremely restless; there was delirium at times, and occasionally twitching of the muscles of the face and limbs. She passed no urine from the 19th to the 20th (16 hours). On the 20th she was semi-conscious; the temperature was 102°, the pulse was 120, of distinctly high tension, and the tongue was dry. The knee-jerks and superficial reflexes were exaggerated, Kernig's sign was present, and there was carpo-pedal spasm. The pupils were widely dilated, equal, and reacted sluggishly. The urine was blood-red in colour, of specific gravity 1032, acid, and had a copious deposit. Albumin measured 0·4 Esbach (⅖ volume), and microscopically there were many blood corpuscles, blood casts, and abundant epithelial casts and epithelium. During the next three days the condition remained unchanged, despite treatment. On account of enuresis the urine could not be measured, but was certainly less than normal. When conscious she complained of headache, there were frequent muscular twitchings and deviation of eyes and head to the right, and nystagmus was present. Periods of consciousness, when the child drank greedily and seemed better, were succeeded by periods of delirium, deepening to coma on the 23rd, when she died. The temperature (morning and evening) during the last four days varied from 102° to 103°, and the pulse was from 120 to 130 per minute and of high tension. On the day of death a blotchy erythematous eruption appeared on the abdomen, legs, feet, arms, and palms of the hands. The urine during the last four days contained a great number of blood, epithelial, and granular casts, and albumin measured from 0·5 to 0·8 Esbach. There was no œdema or dropsy during the illness. A necropsy was refused.

In the absence of any post-mortem record, it must be uncertain whether these cases of hereditary hæmaturia are of vaso-motor origin,[5] or are due to structural changes in the renal vessels or tissues.[6] That the hæmaturia appears to be congenital and persistent, and that in the case above reported the symptoms of nephritis developed, seems to point to the latter suggestion rather than to the former.

Kilmarnock, N.B.

THE GENESIS OF THE MODERN INFIRMARY.[1]

BY F. S. TOOGOOD, M.D. LOND., D.P.H.,
BARRISTER-AT-LAW; MEDICAL SUPERINTENDENT OF LEWISHAM INFIRMARY.

FROM amidst the universal chorus of condemnation which arose when the report of the Royal Commission on the Poor Laws was issued there has been very little either said or written against the medical side of the service. There are many of us who remember how matters stood 25 years ago, and some of us have been told by our predecessors of the condition of affairs as they found them on their first acquaintance with Poor-law. Even those who are shouting most vehemently against the present order of things have, I notice, little in their condemnation which is derogatory to the medical work in which we are all so much interested. Truly we are not greatly praised, but after an experience of decades of professional aloofness and public apathy one has ceased to expect decoration or official recognition for services which for single-heartedness and devotion will bear comparison with those given in any other branch of civil service. Poor-law has ever been the Cinderella of the services, and the immense improvements which have taken place in the last fifty years have been effected by the medical officers themselves fighting, usually single-handed, against a hostile authority, and with superior officialdom unable to extend any effective support. I have no hesitation whatever in saying that the arrangements of a modern infirmary compare favourably with those existing at a general hospital; and certainly both for humanity and effectiveness the out-door Poor-law medical service is superior to the out-patient departments of our voluntary charities. Our service has nearly worked out its own salvation, and I see danger both to the community and to the medical profession as a whole if many of the suggested alterations receive the sanction of the public.

In the old days before the separation of the infirmary from the workhouse there was abundant scope for improvement in the treatment of the sick, but it must not be forgotten that even then things were little better in the general hospitals. There were no trained nurses. There were a certain number of poorly educated women who had drifted into sick-nursing generally because they had failed in other walks of life. There was no regular service of nursing as we understand it to-day. The higher female officials who held positions corresponding to the matrons, assistant matrons, and nursing superintendents of to-day were usually the inadequately provided-for widows of defunct local professional men or superior tradesmen. I have had it from an eye-witness that the night nurses of one of the most renowned hospitals in the United Kingdom habitually had wash-tubs in the ward and were responsible for the cleansing of a considerable portion of the hospital linen. With such a condition in the institutions which set the tone, what was to be expected of less favoured establishments?

The sick wards being part of the workhouse were necessarily under the jurisdiction of the workhouse master; he has been immortalised as Mr. Bumble, and the species is far from extinct, although education and a more enlightened policy on the part of electing boards have relegated him in great measure to the more inaccessible parts of the country. For a layman to be in supreme authority in an institution devoted to professional uses it is necessary, if chaos is to be averted, that both the layman and the professional element should be highly educated gentlefolk, endowed with absolute control over their tempers and possessing the power of appreciating and respecting the most delicate feelings of others. I have never yet found this happy combination of good qualities; and quite apart from the inherent absurdity of placing an uneducated person in a position where he was enabled to control men and women of superior education and attainments, there was an essential difference in their points of view, the one regarding every inmate or patient as someone to be "repressed," while the humanitarian training of the other had taught him to regard every sufferer as a fellow-being entitled to his respect, for whom it was his duty to put forth his whole power that he might cure him if possible, and at least give him comfort and peace.

The buildings were ill adapted for purposes of treatment; they were designed by architects whose ideas were actuated by the requirements of an eight-roomed house and who had no medical assistance to indicate what was required. Small wards, badly lighted with small inaccessible windows, apparently designed with the idea of preventing a patient leaving the building in an unconventional manner; fireplaces which would have efficiently adorned an artisan's best parlour; with the ward kitchen usually forgotten and the lavatory treated with the æsthetic consideration which demands that it should be made as difficult as possible of observation and therefore of access. The shell of the building was as a rule remarkably good and therefore adaptation to modern requirements has been found in some measure possible. The nursing arrangements were to our present notions deplorable. There were a few paid female attendants devoid of any trained knowledge of nursing and always too old and too engrooved to be capable of assimilating more than a rule-of-thumb method of instruction. As each of these women often had 100 sick persons under her care she neither could nor did perform any of the actual offices of nursing which were entrusted to old pauper women often imbecile, usually senile, and always worthless. Invariably a very heavy toll was levied upon any stimulant or delicacy ordered, while both patients and pauper nurses would save their brandy or whisky until visiting day and then have a grand carousal with their friends. So little real attention or inspection was bestowed upon patients that one woman successfully simulated paralysis for years; her affectation of piety rendered her an object of great interest to many benevolent visiting ladies, who showed their sympathy by giving her presents of sugar, tea, and snuff. These she hid in her flock bed. A freshly appointed medical officer, whose new broom was sweeping cleanly, earned an unsympathetic notoriety by insisting upon getting her out of bed, when many pounds of dry goods were found as well as several nests of mice. The patient recovered the use of her legs, which the nurses knew she had never lost, as she was

[5] See Debaireux: Clinical Journal, Feb. 22nd, 1899; Bryant: Clinical Journal, July 25th, 1900.

[6] See Fenwick: Clinical Cystoscopy, 1904; Cabot: American Journal of the Medical Sciences, 1909.

[1] A paper read at the annual meeting of the Poor-law Medical Officers' Association of England and Wales held at the Guildhall, London, on July 6th, 1909.

often seen walking about at night, but such was the local belief in her sanctity that they were afraid to hint at the imposture.

The children under the old state of things probably suffered more than any other class. Left to the mercy of hags who drank their milk and grossly neglected them, their hold on life was rendered more precarious by the difficulty which the medical officer experienced in getting his orders duly executed. It will appear almost inconceivable that milk prescribed by the doctor was refused by the master and in some instances flour and water substituted. Representation to the board of guardians proving futile, one medical officer, the late Dr. D. M. Forbes, who related the circumstances to me, conceived the idea of refusing a certificate of death in every case where his instructions had not been faithfully carried out. The coroner zealously supported the efforts of the doctor, and the publicity so roused public opinion that the separation of the sick wards from the dominion of the master speedily resulted. Unfortunately lessons dearly bought are soon forgotten and quite recently the chairman of a powerful public authority in evidence before a commission advocated a return to lay superintendence. The reason is obvious: lay superintendence is naturally subservient to the authority of a board, its opinion is isolated and carries merely its own weight, whereas professional superintendence is dominant and compelling, and has behind it the power of a great organisation and cannot be lightly neglected. Fifty years ago the battle for the welfare of the patient was fought and won; if, unfortunately, it should become necessary to fight again I have no doubt either that the man will be forthcoming or that the victory will be ours. In the midst of strife and contention it is well to be able to appreciate the humorous aspect of the situation. Dr. Forbes used to relate the following circumstance with great relish. At a time when relations between himself and the workhouse master were strained, the latter used to take every opportunity of making the doctor's life uncomfortable, and one of his tricks was that of disturbing his rest by needlessly calling him up at night. This needed collusion with the attendant upon night duty, which in this instance was forthcoming. Night after night, and many times in each night the unfortunate doctor was roused from his bed to see patients who obviously did not require his services. It was impossible to complain, the patients were in the building because they were sick, and if the attendant considered that their condition was such that the advice of the doctor was necessary, it was obviously impossible for him to resent it openly. Had the board been friendly it could not interfere with the discretion of an officer expressly charged with the duty of looking after sick at night, and in this case the board was the reverse of friendly. The canny Scot, however, gauged the situation. He saw that he must make the process of calling him involve discomfort to the master and attendant as well as to himself. At first, therefore, he ordered for every suitable case beaten-up eggs; this necessitated the master being roused to go to his stores and also gave the attendant the job of manipulating the eggs to the required consistency. This answered for a time, but not for long, as the enemy forestalled him by preparing ammunition in the day-time. A renewal of the disturbance was met by the prescribing of brandy; this was successful inasmuch as the master was compelled to rise for each portion ordered, as he could not trust it in bulk to the attendant, but from an unforeseen reason it defeated its object, for when the patients found that being suddenly taken ill at night meant brandy, a large number of adventurous spirits speedily and frequently developed alarming symptoms. The next move was, however, final and decisive; it consisted in ordering crushed ice poultices. Now there was only one ice chest and that was in the basement far from the master's bedroom, the process of crushing ice is laborious, and the wearing of an ice poultice is not eagerly sought for. Hence the final victory remained with the medical man.

To persons unaccustomed to institution life this may seem rather "small beer," but I introduce it merely as one illustration of the many circumstances which render it imperative that establishments for the treatment of the sick should be under medical control. Half a century ago the professional education of a medical man was not to be compared with that demanded of him to-day. Hence the cases, both medical and surgical, found in workhouse sick wards were quite ordinary in character, mainly those incidental to childhood and old age occurring amongst the inmates of the workhouse. Patients needing surgical operations were transferred to the nearest hospital, and necessarily so because, even if the medical officer had the requisite skill and experience, the appliances and nursing were lacking. The medical officer's contract frequently stipulated that he should supply drugs and surgical instruments, and this for a salary which was invariably beggarly in amount. Even in those instances where the guardians were responsible for supplying materials the hospital idea had not yet evolved itself, and sick wards contained merely inmates of the workhouse who were out of health and required some special attention and diet. But with the separation of the sick wards from the ordinary workhouse administration, which resulted in the establishment of separate infirmaries, a gradual transformation was commenced which has progressed until to-day the best of our London infirmaries are clinically equal to any of the general hospitals. The evolution was somewhat slow, for many changes were necessary and the needful combinations required time to eventuate. Firstly, it was requisite that the doctor appointed should have had special institution training; the power to govern a large staff successfully is only acquired by years of experience, and a good administrator must be caught young and must grow up in the atmosphere. Those superintendents who have failed as administrators, and who have incidentally been cited as examples of medical inability to govern, have been men who have been unwisely translated from general practice without having served the needful and essential apprenticeship. Naturally it took some years to create a supply of these trained men. The nursing staff slowly grew into proficiency. There was at first little to attract desirable women to the service of an infirmary. The workhouse associations were still strongly in the public mind. It was not yet considered essential that the matron should be a trained nurse, and as the appointing authority usually elected a local female whose indigence was her chief qualification, she was usually a very indifferent housekeeper. It was obviously impossible to expect trained nurses to serve under a woman with no training, so the best class of nurse was never forthcoming even as head nurses, while for assistant nurses the flotsam and jetsam from fever hospitals, failures from general hospitals, and ward maids with some smattering of knowledge alone were available.

Marylebone Infirmary initiated a system whereby women known as "Nightingale nurses," having received a year's training at St. Thomas's Hospital, were transferred to Marylebone Infirmary to complete their professional pupilage. The Workhouse Nursing Association, now, I believe, defunct, supplied some infirmaries with young women who had received a year's training in nursing at some medical institution. Those infirmaries who availed themselves of this supply were enabled to tide over a difficult period of their history, but the condition of dual authority which the arrangement involved did not work well in practice, and the infirmary authorities one after the other secured their nursing staff by establishing a training school for nurses and by granting certificates for proficiency in nursing. The confidence of the medical profession and the public in the infirmary was growing. The increase in the number of admissions necessitated the appointment of additional medical officers, at first one assistant, but latterly in most infirmaries there are two, and in some, where additional duties have been placed upon the administration, further medical officers have been sanctioned. The constant succession of young practitioners fresh from hospital has been useful in keeping up a spirit of modernity where otherwise there would have been a tendency to stagnation. Undoubtedly in the earlier appointments of medical superintendents the posts were not filled by the best men obtainable—local interests were allowed to predominate, but in recent years there has been no lack of first-rate candidates and little fault could be found with the local boards in their ultimate selection. With the institutions staffed by conscientious and capable men, with trained nurses appointed as matrons, and with young well-educated women as nurses, the tone of the institutions changed vastly for the better, and as a consequence the class of person admitted as patients included many who could not rightfully be designated paupers, and insensibly the stigma of pauperism has detached itself from the infirmaries.

There are two circumstances which determine the character

of an infirmary: firstly, the presence or absence in the neighbourhood of a general hospital; and secondly, the energy and ability of the infirmary medical staff. Some districts are abundantly served by general hospitals, and there the infirmary patients will be found to consist mainly of persons suffering from chronic and incurable diseases; there will be few acute cases and little or no surgery; whilst the social status of the majority will more closely approximate to that of the ordinary workhouse inmate. But in a district remote from a general hospital, especially if the infirmary medical staff be keen, the local medical practitioners and the general public speedily discover that all emergencies can be dealt with in the local institution and soon the patients, both in social status and in the nature of their diseases, can scarcely be differentiated from those of a general hospital. Curiously enough, the better the class of patient the less are the individuals affected by whatever stigma of pauperism there is remaining. Two circumstances appeal largely to the patients. Firstly, the fact that the infirmary is near to the homes of their friends, and therefore they can be visited easily, frequently and with little expense; and, secondly, the restfulness of the infirmary wards. The patients in a general hospital—I am speaking of those to which a medical school is attached—are naturally objects of interest from a clinical point of view, and the larger the numbers of the staff and the students, the greater is the amount of time spent in examination of the patient; consequently a really interesting "case" becomes speedily "fed up" with the amount of attention bestowed upon him by enthusiastic investigators. The continuous examination, although often grateful to the patient at first, is speedily regarded with aversion, a feeling which is sometimes vented upon some unlucky student who has the ill-luck to have the case allotted to him for examination purposes.

It has been stated that there is a wealth of material in infirmary wards which ought to be utilised for research and for teaching purposes. It is a mistake to suppose that infirmaries contain cases which are not to be seen in general hospitals; this is not so. In my long experience I have seen no cases which I had not previously seen as a student at University College Hospital, either in the wards or in the out-patient department. Certainly, we see the end of many cases which the hospitals are unable to retain, and we often devote years of attention to surgical cases which leave general hospitals as "cures." So far as research is concerned, the pages of the medical press and the proceedings of the various societies bear witness to the interest which the infirmary medical staff takes in unusual conditions of disease, and permission is never refused to genuine investigators who desire to prosecute inquiries in definite directions.

As to teaching, I am not aware of any real demand. I know, of course, that there are many medical men, whose ambitions exceed their opportunities, who would like to have the run of infirmary wards. It must be remembered that the primary object of an infirmary is to provide treatment for the sick poor, and that there has been no genuine demand for the utilisation of the infirmaries as teaching centres, the reason being that for various well-recognised causes there is a comparative shortage in the number of London medical students, and that for some years past there has been barely a sufficient number to carry on the necessary work of the general hospitals. When a demand for teaching really arises the medical staff of the infirmaries will be found sufficiently keen to undertake the work. The relatively large number of pathological examinations made is an evidence of the interest taken by the staff in their work.

Nor only are the infirmaries responsible for all the work usually undertaken by general hospitals, but they have in addition to provide accommodation for those infectious diseases which are not admitted into the hospitals of the Metropolitan Asylums Board. The latter authority deals with scarlet fever, diphtheria, enteric fever, small-pox, and probably with cerebro-spinal meningitis and typhus fever, leaving to the Poor-law guardians the care of measles, chicken-pox, whooping-cough, erysipelas, and puerperal fever. It is not at all an uncommon thing for an infirmary to have 40 or 50 cases of measles for which room has to be found.

Some of the best work of the service has been performed in the treatment of the mentally affected. So far back as 1891 I advocated and carried out the detention of all cases of lunacy for the full statutory period of 17 days before passing them on to an asylum; this has now become a general practice and roughly one-third of the total admissions to the mental wards require transference to an asylum. The agitation of the London County Council for receiving houses was entirely uncalled for, the work was already in being, and the good effects for which they hoped had already been achieved. This was abundantly recognised by the Royal Commission appointed to consider the working of the lunacy laws. With few exceptions, properly equipped mental blocks exist in all London unions and the small percentage of cases ultimately confined in asylums is a striking evidence of the success of the treatment.

In view of the remarks of the Minority Report of the Royal Commission I feel I must notice the work of the lying-in wards. The infantile mortality-rate has been compared unfavourably with that obtaining at certain lying-in hospitals. In order to make a fair comparison similar conditions must prevail in the institutions compared. I am informed that in the special lying-in hospitals of London the patients are mainly married women of undoubted respectability and therefore may fairly be called "picked cases." The admissions to a Poor-law lying-in ward include many of the most unfavourable type. Prostitutes rotten with disease, girls who have fallen and who have run the whole gamut of misery from shame and exposure before seeking admission, and who have usually exhausted every available means of terminating the pregnancy, not excluding mechanical interference. A considerable proportion of our cases are primiparæ, and in this district many are sent in by the outside doctors because it is known or anticipated that the labour will be difficult. Now all this information could have been obtained in an exact form by the Commission had it been so minded; certainly its deliberations do not appear to have been characterised by undue haste, and yet a most damaging statement has been issued and widely copied, supported by statistics which are partial and misleading. One-third of the unions are left out altogether and the amazing assumption is made that the children who leave the workhouse or infirmary will die at the same rate as those who remain. A frequent reason for the continued presence of mother and child is the weakly condition of the latter. It is also no uncommon thing for mother and child to leave the lying-in wards at the end of the customary three weeks in perfect condition. The mother returns to her work and the baby is placed out to nurse. It happens frequently that in a few days the child is readmitted to the infirmary in a moribund condition, wofully neglected, and dying from improper feeding. Many of the mothers and babies are transferred to the workhouse, where the former are placed upon a liberal diet, and although apportioned some task either of washing or cleaning, yet the care of the child is regarded by the authorities as the first demand upon the mother. There is, however, no power to prevent her from taking her discharge whenever she thinks fit to do so, and the result usually is that she drags the unfortunate baby about from early morning till late at night with no means of attending to the cleanliness of the child or of supplying it with food. Its condition on their return is deplorable, soaking in filth and inflamed and excoriated to such a degree that weeks of care are required to nurse it back to health, while the wholly improper food taken on these excursions often starts an enteritis which terminates fatally in a few days. I have known a woman give a three months' old baby a meal of beer and boiled French beans from the effects of which the child died. Where the authorities have so little power, is it playing the game to saddle them with the responsibility for affairs over which they have no control?

To return to the consideration of infirmary work proper, I find that there were in the metropolis 26 infirmaries containing 14,863 beds treating 79,111 patients in 1908, employing 1756 nurses and performing over 3500 operations annually under anæsthetics. The number of operations varies greatly, ranging from 12 to over 600. Locality has much to do with the variations in numbers, but the policy of the board of guardians and the inclination of the medical staff are not without their influence. Whilst I am exceedingly proud of the good work which is being done by the numerically small staffs of our infirmaries, I may perhaps be allowed to indicate in what direction improvements might be effected. I see no reason for mixing us up with the sanitary authorities,

whose experience of clinical medicine and surgery terminated with the acquisition of an academic qualification and whose subsequent functions have been more clerical than clinical. The Tuberculosis Order of the Local Government Board suggests methods by which the health authorities may keep in touch with suitable cases after they have left the infirmary with a view to encouraging the patients to continue the exercise of those hygienic measures which they have learnt during their stay in the infirmary wards. London should be dealt with as a whole; the present areas are too small for effective treatment. This would give an opportunity for more economical dealing with disease by enabling some specialisation in treatment to be accomplished. The capacities of existing buildings and the capabilities of persons would then be more efficiently utilised than by the present system, which compels each building to accommodate every disease with the exception of those few for which the Metropolitan Asylums Board is responsible, and which assumes that the medical officers combine in their two, three, or four persons the tactile dexterity and potential energy of a full hospital staff. By judicious grouping considerable economies could be effected. Against this it must not be forgotten that the poor cannot travel great distances to visit their friends and that the transportation of patients for lengthy periods would mean the infliction of considerable hardships.

At present there is little or no coöperation between the outdoor and indoor medical staff, that is, between the district medical officers and the infirmary medical officers. About 15 years ago, in St. George-in-the-East parish, a whole-time medical officer was appointed to attend the outdoor sick poor in one of their more crowded districts; there was, however, no system of coöperation between the outdoor and the indoor staff and the arrangement soon reverted to the part-time district medical officer plan. In Lambeth, however, for some years past, the centrally situated districts have been ministered to by medical officers working from the infirmary under the supervision of the medical superintendent. By this arrangement the administration is made much more smooth. The home circumstances of the patients are known and the frequent discharges and re-admissions are avoided. Often a patient's physical condition no longer requires the skilled attention of the infirmary and he is discharged. His home circumstances may, however, be such that it is impossible for him to remain at home, consequently the district medical officer sends him in again immediately. There being no channel of communication between the district medical officer and the infirmary, the one has no conception of the needs and difficulties of the other, hence there is the risk that they sometimes play at cross purposes. As matters stand the district medical officer has a distinct inducement to send patients to the infirmary, his visiting list is thereby depleted and his leisure is greater. The same argument may, I know, be used to the discomfiture of the indoor staff, but with less truth, as 10 or 20 patients more or less in a building make little difference. I regard the question of whole-time or part-time district medical officer as of little importance, but I think it essential that there should be a central point from which all the work should radiate and the infirmary would appear to be the proper headquarters. I believe a considerable economy in beds would be effected; any temporary overcrowding of the infirmary would be met by the treatment of suitable cases in their own homes. This, through lack of adequate organisation, is at present impossible. The practice of paying a district medical officer a stated salary, to include the provision of medical attendance and of medicines and surgical appliances, has little to recommend it beyond the desire of the guardians to know the extent of their indebtedness, while in actual practice it means that the community is sweating the hard-worked, under-paid medical officer, who has to defend himself by any method open to him.

I have said nothing about the salaries of the infirmary medical officers, and I will now only suggest that I see no reason why the rate of pay should compare so unfavourably with that given to officers holding a similar position in the service of the Metropolitan Asylums Board and of the county asylums. Men who yearly each perform some 300 or 400 major operations are receiving salaries often only one-third, and never more than one-half, as large as those paid by the county boards. It seems to be inevitable that Poor-law officers should be themselves poorly paid. By a curious association of ideas it has come to be regarded as fit and proper that the repressive and deterrent methods which have so long prevailed in Poor-law should apply also to the treatment of officials. Some months ago the less expensive papers waxed indignant over the statement that the nurses of a Poor-law institution received an occasional pineapple as part of their rations. The confusion of ideas is grotesque. A slice of pineapple may cost three half-pence and is surely not a great extravagance, but the disheartening feature of the situation was the revelation of a widely spread feeling that the circumstances of a Poor-law official should not form any strong contrast with those of the class for whose welfare he is responsible. The guardians themselves, or at any rate many of them, resent the circumstance of an official receiving a larger income than they themselves command. The Royal Commission quotes the remark, "He is our servant, and he gets more money than his master." If he succeed in convincing his immediate board that he is worthy of greater recompense his application has still to pass the custodians of the public purse at the Local Government Board, who appear to have a standard of payments based upon the idea that Poor-law medical officers have large private incomes and that this official work is undertaken by them as a recreation. It is most disheartening, after local opinion has recognised one's worth, to find that the report of one's fame has not penetrated into the corridors of Whitehall.

In conclusion, may I express the opinion that the Poor-law medical service does its work efficiently and at a very small cost to the community, and that whatever faults were found with the system by Dr. McVail exist with equal force in hospital and out-patient practice. Efficient supervision can only be secured in out-patient practice at an enormous cost. The medical officer's function is mainly advisory; he cannot compel his patient to follow his advice whether he be a pauper or a peer. Both reports of the Poor-law Commission appear to believe that by calling Poor-law by some other name and by transferring the work to some other authority they have changed the system, but beyond and behind this there are the personal characteristics of the people and the economic conditions from which society is suffering. These will not be altered by the changing of a name nor obliterated by transferring work to bodies devoid of experience.

Lewisham.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF ACUTE PANCREATITIS WITH FAT NECROSIS.

BY F. W. GOYDER, M.B. CANTAB., F.R.C.S. ENG.,
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A WOMAN, aged 36 years, was admitted into the Royal Infirmary, Bradford, on June 7th, 1909, a week after the beginning of her illness. She had had good health until after the birth of her last child 15 months previously. Since this time she had occasional attacks of abdominal pain and vomiting, never being free for more than two months. The history of the present attack was vague; it began suddenly with abdominal pain. She vomited daily and her bowels were constipated until admission. There had been no jaundice and no injury. When admitted into the hospital she complained of epigastric pain, not severe or constant, and looked acutely ill, but with the appearance of previous good health. Examination was difficult owing to her fat. The abdomen was distended, slightly tender in the right loin, and more resistant on the right side than on the left. There was lack of resonance in the right upper quadrant, hyperresonance elsewhere, and no iliac tenderness. The temperature was 98·8° F., the pulse was 100, and the respirations were 36. Leucocytosis was absent. During the next two days the distension varied, the bowels were moved, but vomiting of greenish fluid continued. After this the temperature rose, reaching at times 101°, the vomiting ceased, and the bowels became loose; the motions

were light coloured, bulky, and offensive, with no obvious fat and only occasional curds. The patient's chief complaint was difficulty in breathing, which was worse at night. Her respirations became rapid, but there was no cyanosis. Dyspnœa varied with the distension. Up to the end of June this condition persisted; the temperature, always above normal, rose at times to 102°, with morning remissions often of 2°. Dulness and crepitations were heard over the bases of both lungs.

A diagnosis was made of abscess in the right loin, secondary perhaps to appendicitis. A needle introduced in the right loin withdrew a brownish fœtid fluid containing débris with a few acicular crystals, and no evident pus or blood. Her condition precluded extensive manipulation, but an incision into the loin was rewarded by the discovery of an extensive cavity containing similar fluid and cohesive brownish masses resembling blood clot. The œdema of the feet previously present disappeared temporarily after operation. The wound discharged the same kind of matter. Respiratory difficulties, increasing cardiac insufficiency, and general weakness resulted in her death six weeks after the onset of the illness. Throughout there was no jaundice; the stools, though pale, contained bile, and the urine a small quantity of albumin, but no sugar.

On post-mortem examination the thoracic cavity was much encroached on by the distended abdomen; the lungs were congested at the bases but not consolidated. The peritoneal cavity was normal. No spots of mesenteric fat necrosis were seen; the liver was large, soft, and fatty; the gall-bladder was thickened, unusually fixed, and contained many gall-stones. The ducts appeared to be free; the appendix was normal and the intestines without sign of lesion. Retroperitoneally, communicating with the sloughing operation wound, was an irregular cavity with necrotic walls. It was roughly H-shaped, the right-hand limb extending from the iliac crest, behind the liver, to the diaphragm, the connecting limb surrounding the pancreas, and the left limb lying behind the spleen and the descending colon. The pancreas was large, hard, and fibrous, without sign of hæmorrhage, the head densely adherent. The contents of the cavity were like those found at operation—they had neither the appearance nor the smell of an ordinary abscess. The odour, although unlike that of a bacillus coli infection, was no less offensive. I cannot describe it, but I should know it again.

If I am correct in my reading of thecase, the following was the order of events: (1) gall-stones with one or more attacks of cholecystitis; (2) a secondary pancreatitis; (3) a pancreatic lesion causing escape of the secretion behind the peritoneum; and (4) retroperitoneal necrosis of the abundant fat in this region with formation of the tumour in the right loin.

The difficulty in the diagnosis of such cases is well known. An acute abdominal catastrophe is usually the most that can be made out in the severest cases; intestinal obstruction or appendicitis are commonly diagnosed. The unusual features in this case are the comparative lack of severity of the onset and the long course. Of the latter, however, Moynihan says: "Gangrene and diffuse suppuration are to be considered only as terminal phases, and not as special forms of acute inflammation of the pancreas."[1]

Bradford.

A CASE OF PURPURA HÆMORRHAGICA FOLLOWING THE USE OF FIBROLYSIN.

By S. CLIFFORD PRITCHARD, M.D. EDIN.

With a Note by SIR JAMES REID, Bart., G.C.V.O., K.C.B., M.D., F.R.C.P. Lond.

THE patient, who was 69 years of age, complained of Dupuytren's contraction in both palms; in the left hand the condition was so advanced that the terminal phalanx of the ring finger touched the palm; in the right hand the affection was just commencing. It was decided to try to reduce the contractions by fibrolysin. The first injection of 2·3 cubic centimetres (as obtained in sealed glass tubes) was made on March 27th, and a second one on April 1st. It was repeated on April 5th, and then every third day until May 20th, making 18 injections in all. The palms were massaged every day. The condition slowly showed signs of improvement, the left especially becoming softer and less tied down. On May 19th there was a slight epistaxis, while on the 21st the patient had a slight bleeding from the gums and a few purpuric spots appeared on both legs. He was given calcium chloride (10 grains every four hours). On the 22nd the bleeding from the gums was rather more profuse, and there were more purpuric spots on the legs. On the following day the bleeding from the gums increased, there were more purpuric spots, and for the first time there was hæmaturia. Passing urine was also very painful. Calcium lactate (10 grains three times a day) was given as well as the calcium chloride. On the 24th, as all the symptoms continued, it was decided to give the patient a mixture containing perchloride of iron (7 minims every two hours), together with 30 grains of calcium chloride twice a day; an alum mouth-wash was also prescribed. On the 25th there was a slight improvement in the hæmaturia and also in the bleeding from the gums. The same mixtures were continued and hazeline was substituted for the alum in the mouth-wash. On the 26th a very great reduction of the bleeding both from the gums and in the urine took place, and on the following day the bleeding entirely stopped. The patient, who had taken only liquid food until now, was able to manage soft solids. The temperature had remained normal throughout, but the pulse, which at first was 72, had gradually increased to 90, but was quite regular. The arterial tension had been at first very high but gradually became less and was now a little below normal. On the 28th there was still no bleeding. A mixture containing nux vomica and nitro-hydrochloric acid was substituted for the perchloride of iron. The pulse remained good, but the patient was restless and seemed inclined to wander. On the 29th early in the morning the pulse became very irregular and occasionally intermittent, and from now onwards it gradually got weaker and faster, with short intervals during which it was quite regular and of good tension, until on the afternoon of the 30th death occurred.

Note by SIR JAMES REID.—This patient, whom I saw several times in consultation with Dr. Clifford, had for some years been the subject of glycosuria, as well as of occasional slight albuminuria. In January the amount of sugar present was found to vary from 1½ to 3½ grains per ounce and was kept under by a modified dietary. (When the injections began neither sugar nor albumin was present.) He also had a systolic aortic murmur, and for a year had been subject to occasional anginal attacks which came on only when he was walking, obliging him to stop, when they passed off. The exhibition of trinitrin, varied by sodium nitrite, had been followed by a reduction in the frequency and severity of these attacks. When the first purpura appeared the amount of sugar present in the urine was found to have risen to 8 grains per ounce, and the question arises whether the presence of sugar in the blood may have created a special vulnerability to fibrolysin, and whether there was any connexion between the injection of fibrolysin and the rise in the amount of sugar present.

A CASE OF TETANUS TREATED WITH ANTITOXIN; RECOVERY.

By ROBERT C. PITT, M.R.C.S. ENG., L.R.C.P. LOND.,

SURGEON TO THE MALMESBURY COTTAGE HOSPITAL.

ON April 8th a man, aged 42 years, came to see me and complained of stiffness in the jaw which he attributed to injuries he had received on March 18th whilst fighting with another man. He also had a small wound on the bridge of his nose which had practically healed. On the 11th I was sent for to see him and all he complained of was backache and stiff jaw. I saw him again on the following day, when definite signs of tetanus had developed. He complained of stiffness in his neck, back, and legs and "awful cramps."

On April 13th the patient was admitted to the Malmesbury Cottage Hospital, and on examination presented the following signs. The muscles of the jaw were stiff and rigid and fixed. The neck, back, and legs were absolutely rigid so that if his feet were raised he rested on the back of his head, and his abdominal muscles were as hard as a board. His pulse was not quickened nor his temperature raised. He was placed in a ward by himself, the room was darkened, and a nurse was in constant attendance. As much nourishment as he could possibly take was given him in the shape of

[1] Keen's Surgery, article on the Pancreas.

concentrated meat-juices, milk, eggs, and stimulants which were passed through a fine tube into his mouth. 30 cubic centimetres of antitoxin were injected into the skin of the abdomen on three consecutive days. The painful spasms were relieved by morphia and his constipation by aperients. Three days after the third injection of antitoxin a rash developed (antitoxin rash). On the 24th he was able to bend his left knee. On the 26th he complained of great pain in the bowels and had frequent diarrhœa which lasted two days. This was relieved by a large dose of castor oil and a few drops of laudanum. On the 29th he was less rigid and could move both legs and open his mouth a little and began to eat solid food. On the following day (the 30th) he was sick and continued vomiting for 14 hours. The vomit was at first bilious but afterwards became fæcal. He was collapsed, his extremities were cold, the pulse was very rapid, and the temperature was subnormal. Nutrient enemata and stimulants were administered by the rectum. When I saw him the next morning the vomiting had ceased and I found him sleeping and lying on his side with his legs curled up. He had taken a little nourishment by the mouth. Subsequently he got better daily and left the hospital on May 14th.

The case has several points of interest: (1) The long incubation period and the very gradual onset; (2) the normal temperature throughout; (3) the successful use of antitoxin; and (4) the intestinal trouble, first frequent diarrhœa which was followed three days later by symptoms of intestinal obstruction, and which looked like bringing about a fatal issue.

Malmesbury.

Reviews and Notices of Books.

Special Hospitals: Their Origin, Development, and Relationship to Medical Education; their Economic Aspects and Relative Freedom from Abuse. By RICHARD KERSHAW. London: George Pulman and Sons, Limited. 1909. Pp. 72. Price 2*s.* 6*d.*

Mr. Kershaw, who is the secretary of the Central London Throat and Ear Hospital, is naturally a warm advocate for special hospitals, and his unassuming little monograph certainly pleads their cause with eloquence. He commences by giving some historical instances of specialism, referring, of course, to the famous passage in the second book of Herodotus about specialism in Egypt. In places Mr. Kershaw is led into looseness of expression, as, for instance, on p. 20, where he says, "In the fifteenth and sixteenth centuries, the renaissance of medical science led to the establishment of universities and to the foundation of medical corporations," as if neither of these bodies had existed previously. Now all the great European universities were founded long prior to the fifteenth century. Bologna, Paris, and Oxford were all founded in the twelfth century, as was Montpellier, which was for many years the greatest European medical school, with the possible exception of Salerno. Further on Mr. Kershaw says that during the same period so little had medicine developed that at the Universities of St. Andrews and Glasgow it was held to be a section of the faculty of theology, from which it was not separated "until at the University of Aberdeen the first professor of medicine and the only teacher of medicine then in Britain was appointed. ....." Mr. Kershaw does not give the date of this appointment. The University of Aberdeen was founded in 1494, and if this date or one within some 15 years later is meant, Linacre was probably lecturing on medicine at Oxford. He returned to Oxford from Italy after 1491, and Wood says that he was lecturing, though he does not specify in what subject, in 1510. We think that "the only teacher of medicine in Britain" is too bold a statement. With regard to the mention of medicine as a department of the faculty of theology, this implied no disrespect. Medicine and the priesthood had been closely connected all through the middle ages for the simple reason that a religious house was about the only place where a man had the leisure to study, and, moreover, the clerks were about the only members of the community who could read. Many eminent clerics studied medicine, such as Grossetete and Roger Bacon, and conversely many eminent medical men took orders, such as John of Gaddesden and Linacre himself.

In the second part of his book Mr. Kershaw gives a valuable chronological account of the special hospitals founded during the nineteenth century. Thus the London Fever Hospital was founded on May 1st, 1801, by some "Inhabitants of London" at a meeting in the Old Thatched House Tavern. With regard to the charge that special hospitals are proportionally more expensive than general hospitals, Mr. Kershaw, though quite alive to the fact that it is not fair to judge of the efficiency of a hospital by its economy, shows that, taking 15 general hospitals and 31 special hospitals, the cost per in-patient per week in the former is £1 17*s.* 4*d.* and £1 13*s.* in the latter, while an out-patient in a general hospital costs 7¼*d.* per attendance and in a special hospital 8½*d.*

In his last chapter Mr. Kershaw deals with the matter of abuse of charity. In his opinion, the special hospital is free from this abuse, and he gives some figures from the records of the Central London Throat and Ear Hospital which certainly show that the institution is valued by medical men. During the year 1908 there were 10,481 new out-patients and 706 in-patients. Of the former, 3067 and of the latter 392 were sent in by medical practitioners. The book ends with a tabulated list of special hospitals founded during the nineteenth century in the United Kingdom, with figures for 1907 showing the proportion of patients sent by medical men. These figures show that medical men send patients in large numbers to the special hospitals, in which case the institutions "may reasonably claim exemption from any charge of abuse or injustice," says Mr. Kershaw with considerable force.

In the chapter wherein the author deals with specialism and medical education, there are given figures showing how the special hospitals are sought after by medical men and post-graduate students, and the chapter ends with a quotation from Sir James Paget's speech at the International Medical Congress of 1881 wherein he argued forcibly in favour of true specialism. The increase of knowledge, he said, was greater than that of mental power, and "for complete knowledge ..... no one can hope for success unless by limiting himself within the few divisions of the science for which by nature or by education he is best fitted." Given a good general foundation, specialism is now almost a necessity for a comprehensive knowledge of any branch of medicine, and Mr. Kershaw's book marshals the arguments for it in a quiet and dignified fashion.

The Last Days of Charles II. By RAYMOND CRAWFURD, M.A., M.D. Oxon., F.R.C.P. Lond. Oxford: At the Clarendon Press. 1909. Pp. 80. Price 5*s.* net.

THE study of the medical aspects of the deaths of prominent persons is one which is always of interest, especially when, as in the present case, the matter is surrounded by doubts which are by no means easy to clear up. Of old time the only historical studies of deaths that had any medical aspect about them were flavoured with the odium theologicum to an extent which made them, however interesting, extremely untrustworthy, to say nothing of the remarkably vague notions of medicine which prevailed even until the eighteenth century. We need only refer to Lactantius with his "De Morte Persecutorum" and in later times to a delightful little eighteenth century work called "God's Fearful Judgements upon Tyrants and Sinners" as examples. But the book now

before us is written by a scholar and an able physician, and deals with a matter upon which there is only too much evidence rather than too little. As Macaulay says, "Whoever attempts to digest this vast mass of materials into a consistent narrative will find the task a difficult one."

Dr. Crawfurd's view is as follows: "One may assert, with considerable confidence, that his (Charles') death was due to chronic granular kidney (a form of Bright's disease) with uræmic convulsions." It is easier to say from what disease Charles did not die than to state the contrary. It was certainly not apoplexy, if that term be confined to cerebral hæmorrhage, and there was no definite evidence of poisoning—a mode of death which was, of course, suggested at the time. In regard to this latter point, we note that Dr. Crawfurd says that the treatment as laid down in Scarburgh's MS. shows "that those who directed the treatment had no suspicion of poison in their minds." Towards the end of the illness, however, both Goa stone and bezoar were prescribed, which look as if some one had thought of poison. Dr. Crawfurd's theory of uræmia certainly covers most of the symptoms described, and the account of the condition of the brain as found at the post-mortem examination would fit in with uræmia. On the other hand, the King's mental condition throughout to within the last two hours of his life is very unusual in uræmia, for he maintained all his faculties to the end, and except when seized with the convulsions, which seem to have been epileptiform, he was perfectly rational and capable of discussing the most serious matters.

However, it would be difficult in the case of any patient, be he a king or a beggar, to separate the symptoms due to disease from those due to treatment such as the unhappy King received. He was taken ill on the morning of Feb. 2nd, after that Sunday night so forcibly described by Evelyn, and while in the convulsion was bled by Edmund King to 16 ounces with immediate good effect. By this time some six of the king's physicians had arrived. His Majesty was then cupped, given an emetic, a drachm of colocynth and scammony pill, and an enema. After one or two hours the enema was repeated and also the pill. In addition, to use Scarburgh's words, "ut nullum lapidem immotum relinquerent, applicata etiam fuerunt Epispastica universa Capiti derasis prius Capillis." As the day went on he was given more purgatives, including hiera picra and cream of tartar, another enema, spirits of sal ammoniac, and "cephalic plasters" to the soles of his feet. On Tuesday he was bled again, and his bowels were kept continuously relaxed with hiera picra and manna. On Wednesday and Thursday he was given a little rest, and on the Friday he was only given stimulants, Goa stone and bezoar. He died about noon. There was not much belief in the *vis medicatrix naturæ* in the seventeenth century and drugs were practically everything. Hiera picra (the very name shows in what esteem it was held) was and had been for many years the purgative *par excellence*—in fact, its name was applied metaphorically, as, for instance, the title of a twelfth century satire on the clergy, written by one who was at once a clerk and a physician, was "Ierapigra Magistri Egidii de Corboilo ad Purgandos Prelatos." The name, and practically the thing, has survived in the popular term "hickery pickery," and its chief constituent is aloes.

Scarburgh says practically nothing of the symptoms. Dr. Crawfurd gives the Latin text of his original MS. with a translation. Welwood, who was a physician, says that Charles had previously suffered from "fits." Some of these, as Dr. Crawfurd shows, were undoubtedly ague fits, but Welwood gives an account of one fit which was evidently epileptic. During the time of the Popish Plot Charles had an interview with a Romish priest, who came out of the royal closet looking very much alarmed, and, on being interrogated, said that while he was with the King "His Majesty was suddenly surprised with a Fit, accompanied by violent convulsions of his body and Contortions of his Face, which lasted for some Moments ..... and the King ..... bid him not to be afraid, for he had been troubled with the like before." Welwood also says that during the whole of his illness he complained of a racking pain in his stomach, which apparently came on just before the first fit. Could this have been of the nature of angina? Afterwards it might well have been caused by the amount of purgatives. On the whole, then, though uræmia seems to offer the most likely solution of the mystery, we do not think that it can be said to be an absolute one. Dr. Crawfurd adds to the value of his monograph by a memoir of Scarburgh illustrated by a reproduction of a picture of that physician with Arris engaged in a demonstration. Scarburgh is represented sitting in his Doctor's robes and the picture is interesting as apparently he is wearing the fur-lined cappa, a garment which has unfortunately disappeared at Oxford, although Cambridge still retains it for her Vice-Chancellor on degree days.

We congratulate Dr. Crawfurd upon an able piece of work and need only add that the printing and paper of the book are, as is only to be expected in a work issuing from the Clarendon Press, excellent in every way.

American Practice of Surgery: a Complete System of the Science and Art of Surgery by Representative Surgeons of the United States and Canada. Editors: JOSEPH D. BRYANT, M.D., LL.D., and ALBERT H. BUCK, M.D., of New York City. Complete in eight volumes. Profusely illustrated. Vol. IV. New York: William Wood and Company. 1908. Pp. 1010. Price 7, 8, or 9 dollars, according to binding.

WE can only repeat the favourable opinion which we have expressed of the previous volumes of this treatise. This instalment is one of the more important, for it includes the chapter on dislocations extending to 100 pages, the general article on operative surgery occupying 500 pages, and a chapter on orthopædic surgery which fills some 400 pages.

The section on dislocations has been written by Dr. Emmet Rexford of San Francisco and it contains a good account of these lesions. It has a large number of illustrations, and many of these come from Helferich's well-known work. Dr. C. B. G. de Nancrède of Ann Arbor, Michigan, is responsible for the chapter on the influences which should be taken into account before an operation is undertaken; and in it he discusses the environment, the personal qualifications of the operator and assistants, operations "à deux temps," medico-legal considerations, and the influence of the condition of the heart and blood-vessels, of the gastro-intestinal, the genito-urinary, and the nervous systems. The effect of disease of the lungs is also discussed. Dr. George B. Johnston of Richmond, Virginia, has written on the preparation for an operation, and on the care of the patient during and immediately after an operation. It contains many useful suggestions. The article on anæsthetics is the joint production of Dr. Freeman Allen and Dr. F. E. Garland of Boston, Massachusetts. A short sketch is given of the history, and then a very full account follows of the use of the several anæsthetics; it is written with great care and represents very closely the received opinions on anæsthesia. Dr. J. F. Mitchell of Washington has contributed the chapter on local anæsthesia; he maintains that the various methods of local anæsthesia have not been appreciated as they should. He describes all the ordinary methods, but the description of spinal anæsthesia is hardly sufficiently full.

Dr. W. L. Rodman and Dr. J. S. Rodman of Philadelphia are responsible for the excellent section on amputations and disarticulations. In the account of Syme's amputation no mention is made of the useful method of dissecting the heel flap from above, a far easier way than dissecting it from below, as Syme described it. It is also advised that in patients under 14 years the posterior epiphysis of the calcaneum should be left in the heel flap; this is certainly not advisable if the amputation is for disease. The illustrations are numerous and for the most part excellent, but in a modern operation the surgeon should not be represented wearing his coat and with his shirt cuffs visible. A useful appendix to this chapter is a brief account of artificial limbs. Dr. Horace J. Whitacre of Cincinnati has written on excisions of bones and joints, and his article is judicious, for he inclines on the whole towards the more conservative procedures. Dr. J. M. Keyes of New York City is responsible for the chapter on the ligature of arteries and veins in their continuity. The account of this branch of surgery is good. It is a pity to speak nowadays of the "descendens noni" nerve, when we recognise 12 pairs of cranial nerves. It should be called "descendens hypoglossi."

The section on minor surgery and bandaging has been contributed by Dr. R. S. Fowler of Brooklyn. The illustrations are specially good and are reproduced from photographs. This chapter includes such matters as exploratory puncture, aspiration, vaccination, and transfusion. Dr. J. S. Stone's article on plastic surgery contains all that can reasonably be expected, and most of the operations described are illustrated. Dr. C. F. Painter of Boston, Massachusetts, has written on congenital dislocations; he preserves a very judicious attitude regarding the treatment of congenital dislocation of the hip, a matter on which many diverse opinions have been expressed. The remaining chapters deal with various departments of orthopædic surgery—Dr. G. D. Stewart of New York writing on torticollis, Dr. C. F. Painter on infantile paralysis, Dr. Royal Whitman of New York on deformities of the lower extremities, and Dr. C. L. Starr of Toronto on caries of the spine. They are all good; we would suggest that it would have been well to point out that "infantile paralysis" by no means rarely occurs in adults.

The whole book, as we have already stated, fully maintains the high standard of the earlier volumes.

Handbuch der Technik und Methodik der Immunitätsforschung (*Hand-book of the Technique and Methods of Investigation of Immunity.*) Edited by Professor Dr. R. KRAUS and Dr. C. LEVADITI. Second Volume, First Part. With one curve and 56 plates. Jena: Gustav Fischer. 1908. Pp. 278. Price 8 marks.

THE study of immunity has enriched therapeutics with curative serums and other substances of the greatest practical value. The technique involved in the investigation of the protective processes summed up under the term of immunity and in the preparation in large quantities of these curative substances is a matter of great importance. The necessity for exact methods and for rigid precautions is, perhaps, greater in bacteriological procedures than in any other branch of biological science. An authoritative text-book by recognised masters of the subject should therefore be of great value, and in the book before us we have an exhaustive and practical description of the methods employed.

Professor R. Kretz of Prague contributes an account of the technique of the preparation of antibodies in large animals, with especial reference to the preparation of diphtheria serum from horses. Dr. Thorvald Madsen of Copenhagen describes the methods of immunisation in small animals. Dr. C. Levaditi, of the Pasteur Institute at Paris, describes the technique of the preparation of antibacterial and antitoxic immune serums as practised in the Institute, more especially in regard to the preparation of diphtheria and tetanus antitoxins, antistreptococcal and antidysenteric serums. The methods for injection of the antigen, for collecting the serum, for preparing and packing it, are described and illustrated. An interesting description is also given of an exsiccator for preparing dried serum. It is capable of dealing with eight litres of serum in eight hours. Dr. Ernst Pribram of Vienna contributes an interesting account of the preparation of antibodies by means of chemical and physical methods. He divides the antibodies into (1) those which hinder a specific effect of the antigen, such as toxic, hæmotoxic, and ferment actions; (2) those which lead to precipitation and agglutination; and (3) those which dissolve cellular structures—"lysins," such as bacteriolysins, cytolysins, and hæmolysins. The effects of various protein precipitants and of various substances obtained from epithelial structures are described. Dr. Thorvald Madsen gives a long account of the properties of diphtheria antitoxin, including the methods for estimation of its antitoxic power and for demonstrating its harmlessness as regards organisms. The nature of the antitoxin unit is explained and the method of its estimation given in detail. The questions of the duration of activity, of the mode of action, and of the prophylactic use of the serum are also discussed in detail. The same author gives a description of botalismus antitoxin. Tetanus antitoxin is discussed by Dr. M. von Eisler and Dr. E. Pribram of Vienna. They give details of its preparation, standardisation, and of its use. They describe the various methods of administration by subcutaneous, intravenous, intraneural, intracerebral, and subdural injection. Dr. R. Doerr of Vienna describes dysentery antitoxin and gives a historical summary of the researches leading up to its recognition as an antitoxic rather than an antibacterial serum. He gives favourable accounts of its action in the treatment of dysentery.

Dr. R. Grassberger and Dr. A. Schattenfroh of Vienna deal with the antitoxin of symptomatic anthrax; and Dr. R. Kraus, also of Vienna, with the antitoxins for the cholera and other vibrios. Dr. R. Stenitzer of Vienna contributes an account of typhoid antitoxins, including those of Chantemesse, Besredka, Macfadyen, and Aronson. Dr. Pribram and Dr. V. K. Russ discuss the various antihæmotoxins. An interesting description is given by Professor A. Calmette of Lille of antitoxins against snake poisons. The problems of natural immunity, of artificial active immunisation, of titration of the immune serums, and of polyvalence are all considered as well as the therapeutic applications of the serums. Professor M. Jacoby of Berlin deals with antibodies for vegetable toxins, including antiricin, antiabrin, and anticrotin; and Dr. O. C. W. Prausnitz of London with hay fever antitoxin. Each article has a useful bibliography attached to it.

This book is a valuable addition to bacteriological literature and should be almost a necessity in bacteriological laboratories.

LIBRARY TABLE.

The Elements of Hygiene for Schools. Compiled by ISOBEL MCISAAC, late Superintendent of the Illinois Training School for Nurses. New York: The Macmillan Company. 1909. Pp. 172. Price 3*s.* 6*d.*—The aim of this book is to present the subject of hygiene in such a way that it may be of practical everyday use to a large number of pupils who will have little opportunity for study of the subject, but it contains a great deal more than could be assimilated by

scholars of elementary schools, and is more fitted to the intelligence of the teachers in such schools. In the opening chapter a short account of micro-organisms is given, and chapters follow on general hygiene with reference to air, soil, and water. The dissemination of disease is dealt with, as are also personal, household, and school hygiene, the hygiene of occupation, and the employment of women and children. There are nowadays many little books published containing information of this sort, and Miss McIsaac has produced a good specimen of the class.

A Handbook on Foreign Study. Edinburgh: The Darien Press. Pp. 150. Price 6*d.* net.—This little book contains valuable information concerning the universities of Europe in a form very suitable for reference. Its aim, as stated in the preface, is firstly, to popularise in British academic circles the idea of studying abroad; and secondly, to afford those who desire to study abroad some general guidance as to the best place to go with the maximum of pleasure and profit. The handbook is made the more valuable by reason of the fact that it has been compiled mainly from official publications or reports "based on personal experience." We have for several years published in various Students' Numbers of THE LANCET information regarding post-graduate study abroad, so far as medical education is concerned, but this little book, which has been compiled and edited by Mr. H. J. Darnton-Fraser under the auspices of the Students' Representative Councils of Great Britain and Ireland represented at the British Universities Students' Congress, deals with all the faculties in the universities of Europe. Mr. Haldane, the Secretary of State for War, contributes an introduction, and there are short articles by Professor William Osler on Medicine, Dr. J. Hogarth Pringle on Surgery, Professor Pringle Patterson on Philosophy, Dr. J. A. S. Watson on Agriculture, the Rev. T. W. Watt on Divinity, Dr. T. C. Thomson on Science and Engineering, and some general remarks on the Study of Law. The information in regard to each university town is given under such headings as fees, cost of living, climate, attractions, libraries, museums, vacation courses, and so forth, and a most useful feature is information as to the cost of a journey to any particular town.

The Fourth Olympiad. Drawn up by THEODORE ANDREA COOK. British Olympic Association. Pp. 794.—This is the official report of the Olympic Games celebrated in London in 1908. It deals with the performances of some 20 different nationalities in 20 divisions of sport and records the outcome of more than 100 separate athletic contests, together with the code of rules under which competitions took place in each of these events. It forms, therefore, a sort of blue-book on the conditions and circumstances of athletics at the present day, and as such will have an interest for many of our readers. Among the illustrations are a picture of Queen Alexandra presenting Dorando with a gold cup, reproductions of the medals and prizes won by the several competitors, portraits of the competitors themselves, and pictures of various incidents during the course of the Olympiad.

Woman in Industry, from Seven Points of View. By GERTRUDE M. TUCKWELL, CONSTANCE SMITH, MARY R. MACARTHUR, MAY TENNANT, NETTIE ADLER, ADELAIDE M. ANDERSON, and CLEMENTINA BLACK. London: Duckworth and Co. 1908. Pp. 217. Price 2*s.* 6*d.* net.—This series of chapters presents a useful and lucid account of the position of the woman worker, the several writers considering in turn the regulation of work for women, the minimum wage they should accept, and their lot in trade unionism, while other topics such as infant mortality, the employment of children, and factory legislation come in for close attention. The book, which is intended to be read by the general public, has a preface by Mr. D. J. Shackleton, M.P., in which the importance of organisation and the necessity for educating public opinion are equally insisted upon.

The Children of the Poor. By A. D. EDWARDS, M.B., B.S. Lond. London: Hammond, Hammond and Co. 1909. Pp. 74. Price 1*s.* net.——*Wastage of Child Life as exemplified by Conditions in Lancashire.* By J. JOHNSTON, M.D. Edin. London: A. C. Fifield. 1909. Pp. 95. Price 1*s.* net.—The author of "The Children of the Poor," who is medical officer to the Bournemouth Education Committee, has had many opportunities of studying the lives of the children of the poor in the only places where such study can be adequately made—namely, in their own homes. He writes with a sympathetic pen and his sketches of child life in the slums, in the workhouse, and in the hospital bear the stamp of truth. He is unsparing in his condemnation of such things as "soothing" medicines and "teething powders." "For every one child," he says, "who dies as the result of an accidental overdose of these drugs a thousand infants are damaged seriously in constitution," and his reproaches of the law which allows the Government to benefit largely by the sale of such concoctions form the echo of medical opinion that has been expressed over and over again. In almost every continental country children, at any rate, are protected to some extent from these things by legislation, while Australia and the United States are considering strong measures to suppress their sale. Realising that the child is the nation's most valuable asset, he concludes his little book with the words: "As evolution tells us that since these children are born and live long years it were better for the State that they should be given during infancy and childhood the chance of health, so economy indicates that the cost of exchanging so many weakly adults for healthy, useful citizens would be a good investment for the State."——Dr. Johnston's book forms No. 7 of the Fabian Socialistic Series, and deals in a systematic manner with the same subject. It also is written out of full knowledge of the subject and forms a useful addition to what must now be becoming a very voluminous literature. But this is as it should be, for the subject is one for the very serious attention of the public mind.

JOURNALS AND MAGAZINES.

The Seventh Bulletin of the Sleeping Sickness Bureau.—The monthly bulletins of the Sleeping Sickness Bureau are always valuable as they contain accurate summaries of all the recent papers and publications relating to sleeping sickness and other forms of trypanosomiasis. Bulletin No. 7 is no exception, for it well maintains the high standard attained by its predecessors. Under the heading of Trypanosome Transmission Experiments, a summary is given of Professor Kleine's observations which were published in May last in the *Deutsche Medizinische Wochenschrift.* These experiments were undertaken primarily to ascertain whether infective tsetse flies convey T. gambiense to a healthy animal only once—i.e., mechanically, or if they are able to infect many animals one after the other in the course of several days or weeks. The latter result, if proved, would show that a sexual development of the trypanosome occurred in the fly. Kleine believes that his experiments prove that the transmission of T. gambiense by the glossina palpalis is not mechanical, but that the fly is the true host of the trypanosome. He also concludes that the development of the parasite in the fly may take a shorter time than the 20 days which he had formerly assumed to be the required period. Another interesting abstract is that of a paper by Carlo Chagas of Rio de Janeiro, who describes two new trypanosomes, one of which he found in a marmoset, and the other in a species of bug (conorrhinus) which is present in great

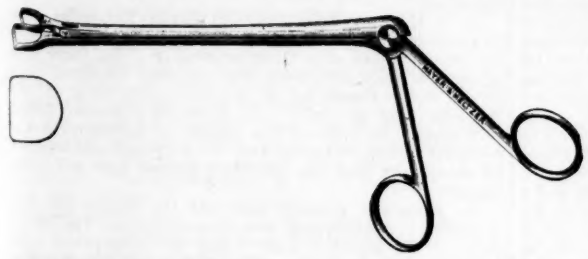
numbers in the poorer-class houses in the State of Minas (Brazil), and which frequently bites human beings, particularly children, on the face. Chagas succeeded in finding in the blood of a patient a trypanosome identical with that found in the bug, the inference being that this particular bug is the transmitter of the trypanosome. Another summary relates to a number of papers dealing with the factors influencing the incubation period in trypanosomiasis; another discusses the symptoms of human trypanosomiasis. We may also mention summaries dealing with lesions of the optic nerve in trypanosomiasis, including atoxyl blindness, the action of human serum on trypanosome infections, the vitality of trypanosomes in cadavers, the bionomics of tsetse flies, the treatment of human and animal trypanosomiasis, and trypanosomes in various animals. Appended to the bulletin is a detailed programme of the work which is now being carried out in the Sleeping Sickness Commission's laboratory in Uganda, and which demonstrates the comprehensive character of the investigations. Another long and useful list of works of reference on trypanosomiasis, continued from the last number, is given at the conclusion of the bulletin.

Man.—The July number of *Man* contains a long paper entitled "Notes on the Hair and Eye Colour of 591 Children of School Age in Surrey." It is by Miss Barbara Freire-Marreco, and was submitted in compliance with a regulation for the diploma in anthropology in the University of Oxford in June, 1908. The area in which the children lived extended from Chobham to Godalming and Shamley, Guildford being the only town included within its limits. The observations were recorded, in the manner recommended by Dr. John Beddoe, on a card ruled into three divisions for eye-colour and subdivided into columns for five colours of hair. The outstanding feature of the record was the predominance of "medium" eyes—i.e., those of a dark bluish-grey, hazel, or light-brown colour—amounting to 65 per cent. for all the children. The colour of the hair called by Dr. Beddoe "niger" or absolute blackness was not observed among these children. Miss Freire-Marreco explains the methods employed by Dr. Beddoe and by Collignon respectively for computing the numerical inferences to be drawn from such observations, but she thinks that neither of them is satisfactory when there is a large predominance of "medium" eyes with 36 per cent. of brown hair.

New Inventions.

A NEW ADENOID FORCEPS.

THE forceps illustrated in the figure have been designed for the snipping away of small tags which are sometimes left after the sweep of a caged curette in the operation for removal of adenoids. The flat-ended blades allow one to snip off the remnant flush with the pharynx. The **D** shows the actual size of the fenestration of the lower blade.



Messrs. Mayer and Meltzer of Great Portland-street, London, W., have faithfully executed the design.

B. SEYMOUR JONES, F.R.C.S.Eng.,
Honorary Assistant Surgeon, Ear and Throat Hospital, Birmingham.

Looking Back.

FROM

THE LANCET, *SATURDAY*, August 13th, 1831.

BELLUM MEDICUM AT WARSAW.

To the Editor of THE LANCET.

SIR,—It is to be regretted very much that such serious disputes should have arisen at Warsaw amongst the medical staff there, on the subject of cholera. It is, I will admit, difficult to discuss scholastic questions without awakening the passions; but when such a devastating demon as this disease is making such fearful strides, it is lamentable to see men quarrelling about bismuth and calomel. If they continue their bickerings, I would recommend the aid of a third metallic remedy—lead—to be administered not to the poor patients, but to the doughty doctors; or I would make bottle imps of them, and leave them like their prototype in the *Diable Boiteux*, until some friendly Asmodeus came to release them. Two of these gentlemen, I find, are thinking of fighting for the reputation of their panaceæ, and if they kill each other in their chivalrous tournament, they will not probably be missed at the Polish capital. Many men have usefully turned their swords into ploughshares; and if these two doctors change their lancets into rapiers, perhaps the Poles will not lose by the transformation.

Mais assez de badinage. As to remedies for this epidemic, practitioners must depend upon chance more than upon the efficacy of any medicinal agent. Any one who has seen many cases of cholera, must know that all our theory and treatment regarding it are sheer speculations; and if he have the candour to confess it he will say that we are absolutely ignorant of its causes and its cure. How absurd, then, and empirical does it appear to see two men going to fight for what they conceive the indisputable merits of calomel and bismuth, for the removal of this disease! During a campaign of three years as assistant-surgeon in the Indian army, in the worst climates, I never saw a case of cholera cured by any reputed specific. It was admitted that the most sensible and rational practice was to meet the symptoms as they presented themselves; and not to adhere to the use of any particular medicine, whatever name or character it might have acquired. I could enumerate many ways (but I would not fight for any one of them) of what I might call curing cholera, but I dare not trespass so much upon the pages of your journal. I will conclude therefore by saying that I will never believe any man, although armed with bismuth and a broadsword, that he can cure cholera, until he can establish a remedy for it as certain as sulphur for psora, mercury for syphilis, or cinchona for intermittent.

I am, Sirs, yours, &c.,

August 8, 1831. VIATOR.

THE BARKER ANATOMICAL PRIZE (ROYAL COLLEGE OF SURGEONS IN IRELAND), 1910.—This prize, which is of the value of £21 and is awarded by the Curator of the Royal College of Surgeons in Ireland, the President of the College, and the Professor of Anatomy in the University of Dublin, is open to any student whose name is on the anatomical class list of any school in the United Kingdom. In 1910 the prize is offered for a dissection of the cervical sympathetic and preparations entered must be in the hands of the Curator on or before April 30th. Particulars of the conditions under which the competition must be carried out and printed forms necessary for application can be obtained from the Curator of the Royal College of Surgeons in Ireland.

THE BRITISH MEDICAL ASSOCIATION.

SEVENTY-SEVENTH ANNUAL MEETING AT BELFAST.

THE SECTIONS.

OPHTHALMOLOGY.

THURSDAY, JULY 29TH.

President, Dr. J. W. BROWNE (Belfast).

Professor EMILE FUCHS (Vienna) read a paper on

Malformation of the Cornea in Cases of Inherited Syphilis.

He said that the work of Hutchinson gave the first account of the later symptoms of inherited syphilis, and since the time of his writing scarcely anything had been added to our knowledge, so complete had been the initial description. His present paper was a trifling contribution to Hutchinson's work. It had struck him that in some cases of the disease the cornea was shaped as a vertical ellipse. The normal cornea tended to have the appearance of a horizontal ellipse because the tissues of the limbus encroached on the cornea above and below, but this appearance was more apparent than real. In these cases of disease, however, the vertical ellipse was real, and not due to encroachment of the limbus. So far he had not arrived at the cause of the malformation, nor had he enough material, as yet, to say with what frequency it was observed. In 28 cases noted 20 occurred in females, and it was noteworthy that interstitial keratitis was much more frequent in females. Half of the cases had interstitial keratitis, 5 chronic iritis, 1 congenital cataract, 2 corneal opacities, probably the result of strumous keratitis. The remaining 6 were old people with senile cataract. Excluding the last 6 old people, for in age the diagnosis of inherited disease was not readily made, he found that in the other 22 cases 8 showed definite inherited syphilis, 8 some indications of it, and 6 no symptoms. During the year he had seen about 50 cases of fresh interstitial keratitis and only 8 of these had the ellipse, so that it was by no means common. He thought that the malformation might prove to be another of the signs of the inheritance of syphilis, although it must, like other signs, be taken with due regard to other conditions.

Mr. E. TREACHER COLLINS (London) asked if Professor Fuchs had examined any of these oval corneæ anatomically so as to eliminate the possibility of the ellipse being due to encroachment of the limbus. The natural human shape was the horizontal oval, and this was marked in fœtal eyes and in some cases of microphthalmia.

Professor FUCHS replied that he had as yet had no opportunity for anatomical examination. But the vertical ellipse was a striking feature, and with it went marked irregular astigmatism often to as much as 5 to 10 dioptres.

Dr. W. B. INGLIS POLLOCK (Glasgow) read a paper on

The Visual Acuity of School Children.

He said that the statistics of visual acuity found in annual reports of different educational authorities varied greatly. In Scotland they were for some parts as low as 6·5 per cent. defective, in others as high as 77·8 per cent. defective—an amazing difference. The London County Council return for 1,196,504 children during the last two years and nine months was 10·39 per cent. defective. The speaker had come to a percentage of 11·65. In some measure the difference was due to modes of testing vision. In London the best binocular vision was taken as the standard; in other places the vision of the worse eye, in yet others that of the better eye was taken as the basis for statistics. Each claimed merits for its procedure. But he said that the vision of the worse eye was not the vision of the child, neither was that of the better eye so good as a rule as of both eyes acting together. The present haphazard mode of compiling statistics was likely to bring the whole question of medical inspection of school children into contempt and discredit.

Mr. N. BISHOP HARMAN (London) said that he had had a large experience of school eye work in London; that led him to the conclusion that the recent edict of the Board of Education that the vision of each eye of a child must be taken separately caused a futile waste of time. We wanted to find out how much the child could see under ordinary conditions. Binocular testing was said to fail in discovering odd eyes; that, he thought, was an objection that did not weigh seriously in practice. He had made large comparative tests and found the alleged error of this mode of testing so small as to be negligible. He regretted that Dr. Pollock had nothing to tell them of the eye conditions responsible for these defects in vision. Recently he had tabulated the results of the examination of the eyes of 1100 London children, with results that were to be found in the Proceedings of the Royal Society of Medicine (Section for the Study of Disease in Children), May, 1909. The percentage of myopia in school children was no more than 2·5 per cent., and probably less, for their tests caught the myopes but not those hypermetropes who had good accommodation.

Dr. R. WALLACE HENRY (Leicester) thought that the elimination of cases of odd eyes was necessary because of the headache caused by such a condition. He agreed with Mr. Harman's returns of the incidence of myopia. Recently he had examined all the defective in 10,000 children, and of the total only 2·5 per cent. had myopia. In examining the rate of increase of myopia it was necessary to consider the age factor, and not the relation to class standards, for myopes were handicapped and tended to drift into low standards.

Professor R. A. REEVE (Toronto) questioned the frequency of asthenopia in children; it mostly came on at the age of from 20 to 30 years, and he found these people did not suffer in school years.

Dr. A. FREELAND FERGUS (Glasgow) read a paper on

Trephining in Glaucoma.

He said that his operation was essentially a modification of Lagrange's operation. He had no hesitation in saying that his modification stood or fell with that of Lagrange. Sclerotomy was difficult of performance, but trephining was extremely easy. He turned forwards a large conjunctival flap, then with a Bowman's corneal trephine bored out a portion of the sclera as close to the limbus as possible. Then he slipped a repositor between the sclera and the ciliary body until the point of it appeared in the anterior chamber. The conjunctiva was replaced and the operation was complete. It had the advantage of being so little painful that a general anæsthetic was quite unnecessary, a point of great importance, since the subjects of chronic glaucoma were so frequently suffering from vascular disease and took general anæsthetics badly. Again, there was no risk of injury to the lens. And lastly, the risks of sepsis could be reduced to a minimum, for the large conjunctival flap speedily adhered and shut off the wound. Trephining the sclera had been performed years ago by Argyll Robertson, but he cut the sclera far back and only did it for the temporary relief of tension. Dr. Fergus further said that he advocated the method for chronic cases only, since the regular iridectomy was by far the better treatment for acute cases. He gave details of his mode of securing asepsis of the conjunctiva.

Dr. A. HILL GRIFFITHS (Manchester) commented on Dr. Fergus's methods of examining the flora of the conjunctiva previous to operating. He agreed that it was good, but thought that in any case it was not possible to free the membrane from organisms.

Dr. A. LITTLE (Bradford) remembered Argyll Robertson doing his early operations. His own objection to the operation lay in the risk of subsequent infection of the eye through the thin conjunctiva overlying the gap in the sclera. He was sure a cystoid scar increased the risks of these eyes, and in some cases he had seen hypopyon iritis years after the operation.

Mr. G. A. BERRY (Edinburgh) said that any innovation must be considered from the point of view of glaucoma generally. Dr. Fergus aimed at a filtration cicatrix. Mr. Berry was of opinion that iridectomy was the best all-round procedure, and he should not do any other operation until this had been tried and failed. In his hands iridectomy failed very rarely. He believed that success in iridectomy lay in removing a piece of healthy iris. If a cystoid scar resulted he should say that the glaucoma process had not been checked.

Mr. TREACHER COLLINS said that Dr. Fergus did two operations: (1) sclerotomy; and (2) cyclodialysis. The use he made of the repositor must detach the ligamentum pectinatum and so put the anterior chamber directly into communication with the venous channels beneath the ciliary body. He would like to know to which of these

steps in the operation Dr. Fergus attributed his success. In his own experience cystoid scars were not a permanent success, but he had had some good results with cyclodialysis.

Mr. S. JOHNSON TAYLOR (Norwich) asked if the method had been tried on blind, painful, glaucomatous eyes; if it could save enucleation then it had a distinct value.

Mr. THOMSON HENDERSON (Nottingham) agreed that permanent bulging wounds indicated that the glaucomatous process had not been checked by the operative procedure.

Professor FUCHS said that he had trephined, but had given it up. Further, he had had experience of cyclodialysis and his assistant, Dr. Müller, had published returns that gave a most hopeful view of its subsequent effect. He regretted to have to say that still later experiences of these same cases showed that the amelioration was not permanent; the tension recurred, and anatomical examination of some of these eyes showed that the scarring of the tissues at the seat of the operation was very dense, so that the passage of the aqueous was less in these parts than elsewhere around the filtration angle. He put iridectomy first as the operation for choice.

Dr. FERGUS, in reply, said that the elimination of organisms from the conjunctiva could not be obtained by the use of drugs. What he did was to irrigate the conjunctiva with plenty of sterile normal saline solution several times a day for four days prior to operation when time permitted. That the result was worth the trouble was proved by the fact that in 700 cataract extractions he had not lost one by suppuration. He agreed that iridectomy was the operation for choice, but there were cases of the chronic order in which some form of sclerotomy seemed of value.

Mr. TREACHER COLLINS (London) opened a discussion on

Disease of the Lymphoid Tissue of the Conjunctiva.

He said that trachoma was the particular disease to be discussed. He had exceptional opportunity of studying it in the schools of the Metropolitan Asylums Board. Children found to exhibit eye trouble in London Poor-law schools were drafted into these isolation schools until free from disease. In the past five years he had received 2441 patients, and of these 700 were suffering from trachoma. Many of them exhibited the disease in its earliest form. The first point he wished to emphasise was that trachoma was a contagious disease. When first one of these schools was started a "house mother" and a nurse, both previously healthy, contracted the disease in an acute form from an affected child. Again, the schools were so delightful in their surroundings that children were loath to leave, and he had found that some admitted for simple disorders deliberately inoculated themselves with discharges from their fellow pupils' eyes; in these cases of inoculation, as definite as any possible, trachoma resulted. The contagious character of trachoma being established, there could be little doubt that the contagious element was a micro-organism. He then referred to the work of Prowazek and Greeff, who, working independently, had discovered in cells from trachomatous tissues by the use of Giemsa's stain minute ovoid bodies smaller than the smallest known cocci. The evidence in favour of their being a specific organism lay at present in the frequency of their appearance in trachoma and their absence in other diseases. In any case they could be sure that the contagion was not air-borne, but that it was conveyed in discharges. For if ordinary precautions of cleanliness were taken neither nurses nor medical men in constant attendance on these cases became affected. Next, there was no doubt that the disease was unlike purulent and muco-purulent inflammations of the conjunctiva, for in these the process was limited to the epithelial lining. Trachoma was more like tubercle, in that both alike produced definite endothelial nodules which were the essence of the diseases. It would therefore seem likely that the contagion of trachoma would be found to exist most commonly in the lymphoid tissues. That the trachoma bodies of Prowazek and Greeff were found only in epithelial cells seemed to him to tell against their being the specific organism. The earliest symptom of the disease appeared to be the presence of grey, scattered, avascular spots, rather smaller than a pin's head, in the tarsal conjunctiva of the upper lid. Graefe and Jacobson had termed these "elementary or primary granulations." Their presence might be obscured when there was coexisting catarrh. The trachoma organism would appear to be non-pyogenic; its toxin seemed to cause immense new formation of lymphoid tissue, increase of plasma cells, and in the later stages formation of fibroblasts. Mayou had pointed out that the characteristic discharge of trachoma was an enormous number of plasma cells. Trachoma was essentially a chronic disease; acute symptoms were usually the result of intercurrent infections—the Koch-Weeks bacillus in England, or that and the gonococcus in Egypt. In the process of cure the follicles might disperse naturally by rupture. They might be absorbed, particularly when there was invasion of polynuclear leucocytes, such as was fostered by intercurrent catarrhal affections and by most of the modes of medical treatment. Gross fibrosis such as was obvious to the naked eye was not a necessary end to the disease; with the best results the scarring might be so minute as to be invisible to the eye. As regards treatment, expression of overloaded follicles by squeezing them out, and excision of the retrotarsal folds in the exceptionally bad cases, were both useful procedures. Mr. Collins never found complete excision of the folds and tarsus necessary. The time-honoured copper sulphate still held first place as the best application to stimulate absorption of the follicles. He referred to Leber's experiments with different metals inserted into the anterior chamber as explanatory of the action of copper salts. Kataphoresis of copper had been tried, but it was too painful. Jequiritol was of much help in obstinate cases. X rays were painless but variable in their results, probably because of the difficulty in securing exact dosage. Radium he had used with little result, for the quantity at his disposal was not very active. Grattage, the stimulation of the tissues by violently rubbing them with hard brushes, spiked iron instruments, or the knife blade, acted only by stimulating the growth of scar tissue. He concluded by stating that in his experience trachoma was completely curable, though the process was long.

Professor RICHARD GREEFF (Berlin) followed, and gave a description of his investigations into the bacteriology of the disease. For the last 10 to 15 years numerous workers had laboured indefatigably at the subject, and it was only when new methods of staining were discovered that his hopes of a real advance had been raised. In Giemsa's stain they had a reagent that had a remarkably selective action on all protozoal material. In collaboration with his assistant Dr. Clausen, and later with Professor Frosch, he had made extensive investigations on both trachomatous and non-trachomatous disease. The bodies which he had found were extremely minute. They were found for the most part massed together in pairs or clusters near the cell nucleus, in the form of a cap, only separated from the nucleus by a narrow clear margin. The space containing the granules enlarged rapidly, causing the cell to swell and burst. They were found most frequently in the epithelial cells, but they had been seen in the deeper adenoid tissues. They disappeared on treatment. So far they had not been cultivated. The bodies had now been recognised by many workers in different parts of Europe and even in Japan. They differed essentially from the granules of eosinophile cell débris. He thought they were more akin to protozoa than bacteria.

Mr. A. F. MACCALLAN (Cairo) described the work being organised under his direction in Egypt in the formation of ophthalmic hospitals for the treatment of trachoma. One fully equipped hospital had been built at the cost of £7000 at Tanta, another would be completed shortly at Assiout, and a third was in course of erection at Mansoura at the expense of an Egyptian gentleman. The travelling hospitals were doing excellent work. Of the extent of the spread of trachoma amongst the population no better evidence could be given than the condition of one primary school in which 96·43 per cent. of the pupils showed active or passive trachoma. He next dealt with the phases that the disease presented during its existence and progress towards cure.

Professor FUCHS said that he had tried to find these new trachoma bodies and had succeeded; indeed, he had been able by this mode of staining to differentiate doubtful cases of trachoma from follicular conjunctivitis, and this was a great gain. But he had only found them in the epithelium in scrapings or sections; never in the underlying tissues or follicles.

Mr. SYDNEY STEPHENSON (London) said that in early days there was much confusion, owing to the teaching that the presence of follicles in the conjunctiva was an early stage of trachoma. That this was not true could be shown by the examination of the children of the general population. After

seeing some 15,000 children of varied classes he concluded that only 5 per cent. had conjunctivæ free from changes of some sort or other. Folliculosis was closely associated with such conditions as adenoids and enlarged tonsils. Follicles in the conjunctiva were not the first stage of trachoma, but had an entirely different significance. The cases of inoculation described by Mr. Collins, and many he had seen himself, left no doubt in his mind that trachoma was not an air-borne, but an essentially contagious disease. Further, he was convinced that proper segregation and treatment would secure extermination of the disease.

Mr. JAMES A. CRAIG (Belfast) said that Ireland enjoyed the unenviable position of being classed next to Egypt as a country in which trachoma was rife. Unfortunately this was true of the industrial schools and workhouses: they were hotbeds of infection. And all this was due to lack of the most ordinary precautions of cleanliness and hygiene. Legislation was badly wanted. The disease was worse than small-pox, for the sufferer was contagious indefinitely. He cited an instance where five nurses were infected with acute trachoma. As regards treatment, he could say that cure had been obtained in from six to nine months in selected cases—that is, in patients who were healthy generally and whose surroundings were good. He no longer held with "bold" surgical methods and brass had banished wire brushes; they did more harm than good. Copper sulphate was ahead of anything else.

FIG. 1.

Dr. JOSEPH NELSON (Belfast) contrasted the results of treatment of two school outbreaks. In one, ordinary drug treatment was used and the disease spread. In the other, a separate colony was formed, good food and good hygiene were obtained, and these measures with drug treatment stayed the plague. He said it was desirable that the common people should know of the disease and get a "holy horror" of it, then it would be checked.

Dr. BYERS (Toronto) and Professor REEVE (Toronto) spoke of the work that was done by emigration authorities for the prevention of the entry of diseased subjects into new countries.

The executive of the section was asked to draw up a resolution on the necessity for Government "*action*" in the suppression of the disease.

FRIDAY, JULY 30TH.

The executive of the section, following the recommendation arrived at in the discussion on Trachoma on the preceding day, presented a resolution for the acceptance of the section to the effect that the Government should be urged to institute measures for the checking of the spread of the disease. After considerable discussion, a resolution, drawn up and proposed by Mr. TREACHER COLLINS (London), and seconded by Dr. A. GREENE (Norwich), was put to and accepted by the meeting:—

That the Council of the British Medical Association be asked to draw the attention of the Local Government Boards of the United Kingdom to the prevalence of trachoma amongst the lower classes, to the damage to sight which it frequently entails, to the contagious character of the discharge from the eyes of those affected, and to the importance of preventing any transference of such discharge from one person's eyes to another's by means of the washing appliances in the institutions under their control.

Mr. J. H. TOMLINSON (Egham) demonstrated the usage of a new instrument of his invention,

A Skotograph with Binocular Fixation.

The instrument could be used as a perimeter, particularly for the mapping out of blind or anæsthetic areas. The test object used to prove the sensitiveness of the retina is a second image of the spot of light used as the fixation point. The second image is obtained by reflection from a mirror hinged within a cone, the angle of the mirror determining the angular position of the second image on the retina. The cone could be rotated round its axis so that the second image is caused to make a circular excursion on the retina. In this way Bjerrum's method of investigation can be employed. The instrument automatically registers the subjective findings of the patient on suitable charts.

Dr. ALEXANDER FLEMING (London) gave a demonstration of his modification of the

Wassermann Serum Diagnosis for Syphilis,

an account of which was published in THE LANCET of May 29th, 1909, p. 1512.

Mr. LESLIE PATON (London) said that Dr. Fleming had examined by these means many of his eye patients at St. Mary's Hospital, and the results were surprisingly good and useful.

Mr. N. BISHOP HARMAN (London), in the course of a demonstration of the

"Diaphragm Test" for Binocular Vision and its Disorders,

said: This test is one of extreme simplicity, and yet one that will elicit a surprising amount of information when applied in practice. It is simple because it rests upon a phenomenon that is of every-day occurrence. On looking out of a window the man who has natural binocular vision sees more widely than does the man who has but one eye or who sees with but one eye at a time. With this test the patient looks through a hole in a screen (D, Fig. 1) at the test-card (T). The paths of the vision are shown in Fig. 1,

FIG. 2.

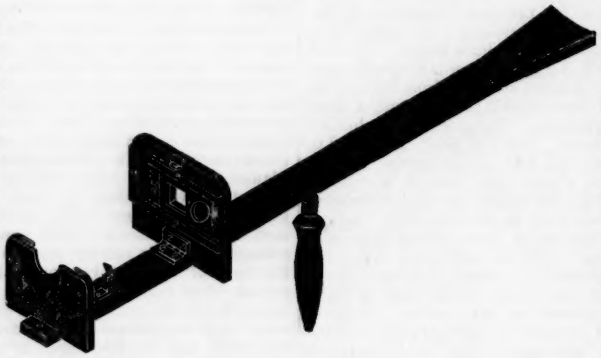


FIG. 3.

A large selection of Screens in Chippendale. Sheraton, Louis XV. and XVI. and other styles, also Lattice Screens, Japanese Screens, Cheval and Wing Screens. An example of value, the Four-Fold

and the manner in which right and left monocular and also binocular vision is arranged for. The form of the instrument is shown in Fig. 2. The appearance of a test-card for reading is seen in Fig. 3; the dotted lines on the print enclose the band of print seen by both eyes; the lateral portions are seen by each eye singly by crossed vision. The test-cards are of great diversity. Print of any size from diamond in set paragraphs to canon in paired capitals; black or coloured squares variously disposed; pictures for children. The test is of value for the following purposes: (1) To determine the equality of visual acuity in the two eyes; (2) to determine the presence, the absence, or a defect of binocular vision; (3) to exercise the vision in squinting eyes; (4) to detect malingerers feigning monocular blindness; and (5) to demonstrate certain physiological phenomena. Take, for example, latent squint: the phenomena produced

by the various orders can be best shown by the use of the test-card with a single line of letters or figures:

123456789

The man with good binocular vision reads 1234 with the right eye, 6789 with the left, and 5 with both eyes. In convergence (esophoria) the middle letters are overlapped and are suppressed so that the man reads something like this:

126789

In divergence (exophoria) the middle letter is reduplicated, and the man reads:

12345 56789

In vertical displacement (hyperphoria) the parts of the line of letters seen by each eye are on different lines or levels, thus:

12345

56789

All these phenomena can be seen by the surgeon himself when an excessive prism is placed before one eye, or by simply displacing one eye by the push of the finger. Again, a malingerer can hardly escape detection by the use of this test. Answers by the mouth are not necessary, for the surgeon, watching the man's eyes, will see *the coördinate movements of the eyes as the man looks from one to other area of crossed vision.* The movement is proof of two-eyed vision; the man with only one seeing eye does not make it. Mr. Harman continued that in recent experiments with the instrument he had found that by varying the size of the hole in the screen it was possible to estimate numerically the value of the desire for perfect binocular vision, or what is known as the "fusion faculty." The instrument is well and cheaply made by Messrs. George Culver, Limited, of White Lion-street, London, N.

Dr. INGLIS POLLOCK said that he found the diaphragm test of the greatest use in examining patients for reading glasses. It took only a minute to tell whether or no the patient had equal vision in the two eyes and whether binocular vision was present.

Professor FUCHS considered the instrument to afford a very good and simple test.

The section then united with the Section of Obstetrics and Gynæcology, and with Dr. JOHN CAMPBELL in the chair proceeded to examine the

Report of the Ophthalmia Neonatorum Committee.

In presenting the report Mr. SYDNEY STEPHENSON, chairman of the committee, said that the committee was a responsible one; it represented many interests. Some of their recommendations were of a far-reaching character and had therefore been referred to the divisions. In this joint discussion their business was recommendation to the Council, not final acceptance of the report.

Dr. WENDELL REBER (Philadelphia) said there were phases of the subject that appealed greatly to him. In the United States they had benefited greatly by the strenuous work done by Lucien Howe. It struck him that there was a tendency to take the matter out of the control of medical men. This was a danger to be guarded against, particularly in England where so much work was done by midwives. These should not be permitted to use Credé's prophylaxis; in the United States this could only be used by the medical man. Again, they had got much benefit by removing both mother and affected child to the hospital; a child should not be cut off from its proper food at such a critical time. It might seem far-fetched but it was not impossible that the mother who had suffered a vaginitis elaborated within her blood an antitoxin that was beneficial to the child.

Dr. GEORGE CARPENTER (London) spoke as a children's specialist, and pointed out that the loss to the child who was the victim of the disease was not only that of sight but of intelligence to some degree. He agreed that there should be no separation of mother and child. And he did not believe in nurses using Credé's prophylaxis. Their only hope was compulsory notification and immediate treatment.

Dr. A. NIMMO WALKER (Liverpool) objected to the universal teaching of Credé's method by obstetricians. The method was not an absolute protection and it sometimes caused permanent damage. There was a reduction in the incidence of the disease and that was not due to Credé's method but to Listerian cleanliness. He questioned the practicability of notification. The disease was not specific and penalties could not be attached to failure of notification where diagnosis was uncertain. At the St. Paul's Hospital they had had great success in treatment by taking into hospital both mother and child. Further, their methods had become known to midwives who had learned to send to them infants of suspected mothers, so they could absolutely forestall the onset of the disease.

Dr. WALLACE HENRY said what general practitioners wanted was a definition of ophthalmia neonatorum; without some clear definition notification was impossible.

Mr. BISHOP HARMAN said that the report was excellent in its general features. But to get any real success in their efforts after legislation or the application of existing legislation they must create a public feeling on the matter. Government officers and ministers would not take any steps in advance of public demands, they had to be forced to work, for independent action only brought them into difficulties. They had been in some degree successful in arousing opinion. Only last year at the International Congress of the Blind in Manchester the subject came up for discussion, with the result that a committee of members of the different blind societies and colleges of the kingdom met and, with the help of two ophthalmic surgeons, drew up a report in simple yet instructive language that the ordinary man might understand, and that without offence.[1] Some of the men on this committee were county councillors and they had exerted useful influence on their colleagues. By such means we could do much. On the matter of "definition," and the alleged difficulty of notification, he thought that the original description of the disease by the committee of the Ophthalmological Society made years ago was ample for all purposes: "If the child's eyes become red and swollen and begin to run with matter ..... " Nothing could be more explicit than that. All these cases should be notifiable. Then the bacteriologist of the local authority would examine films and say whether the case was dangerous or not.

Dr. J. WHARTON (Manchester) said that in his city they had instituted a voluntary system of notification; there had been no difficulties, and its success had been great. Cases had diminished by 40 per cent. and not one eye of those affected had been lost.

Dr. R. C. BUIST (Dundee) said that notification was like a net—it fished up much that was not wanted, but it was the only means of getting what they did want. Would they give up notification of scarlet fever because some cases were erroneously diagnosed? A few mistakes were balanced by the immensity of the protection afforded to the public.

Dr. J. H. TAYLOR (Salford) entered a protest against the Association issuing a report that was really an attempt to crystallise treatment. Such a thing was fatal to all progress, and it had a futher serious danger in that such a report would be held in the courts of law to represent the opinion of the 22,000 members of the Association. If a man did not use their treatment, but some he thought better, he would run the risk of charge of malpraxis.

Dr. CECIL SHAW (Belfast) said that the objections put forward against the notification of ophthalmia neonatorum were just those that had at one time been put forward in the case of diphtheria. The suggestions for treatment given in the report were not prescriptions but only suggestions. He joined in the protest against the haphazard and unrestricted use of strong antiseptics. Recently he had investigated an outbreak of what was thought to be ophthalmia neonatorum; examination of the discharges showed no organisms, and he was convinced that the whole trouble was the result of the abuse of strong perchloride solutions.

Dr. J. STAVELEY DICK (Manchester) said that there should be as little dogmatism in medical treatment as possible, and that therefore the suggestions to practitioners were objectionable. Besides the directions were neither Credé's nor scientific in point of accuracy. He moved an amendment that all that part of page 3 of the report that dealt with "suggestions to practitioners" be omitted.

Dr. ADAM FULTON (Nottingham) seconded the amendment. He objected to the suggestions to practitioners (1) because they were loose and conflicting; (2) because they recommended a proprietary preparation; (3) because they implied that general practitioners were quite ignorant

[1] We publish this report on p. 477 of the present issue.

of how to treat such cases. It was a gratuitous assumption of superiority.

Dr. HENRY said that solicitors' opinion was to the effect that adoption of the suggestions to practitioners would clothe them with almost binding authority in the eyes of the law.

Dr. R. J. JOHNSTONE (Belfast) said the suggestions, if adopted, would only reach those who were already familiar with the subject and not those who might need teaching.

The amendment was put and carried; the motion for the acceptance of the report, so amended, was carried unanimously.

The meeting closed with votes of thanks to the Presidents of the two sections.

TROPICAL MEDICINE.

WEDNESDAY, JULY 28TH.

President, Dr. C. W. DANIELS (London).

The PRESIDENT opened a discussion on

The Persistence of the Tropical Diseases of Man due to Protozoa

by stating that the persistence of the protozoal infection of a single host had to be carefully distinguished from the persistence of protozoa in general. The latter depended on the complex life-history of the parasite, including its sexual development; the former, as far as was known, depended on the length of time during which asexual multiplication could take place without requiring rejuvenescence by sexual reproduction. The great increases in our knowledge of protozoa all pointed in one direction—namely, to an alternation of processes of multiplication, sexual and asexual. In many this was conclusively proved. Dr. Daniels exemplified these processes in the cases of malaria, coccidia, in amœbæ and intestinal flagellates, in spirochætæ and in trypanosomes. In all these cases the disease-causing period of the life of the protozoa was the period when the asexual reproduction was taking place. The sexual forms were harmful, because they were the usual agents in the transmission of disease from one warm-blooded host to others. It was to the sexual development that the peculiar distribution of many tropical diseases was due, but as regards the individual host the sexual reproduction might be ignored. They were therefore limited in that discussion to the consideration of protozoa in their asexual stages. More details of structure of the protozoa must be made out, however, before they could understand many unexplained observations as regards chromatin transformations, especially in the trypanosomes. They were induced to consider sexual reproduction as the ordinary method of multiplication and the asexual as something phenomenal and exceptional, whereas the exceptional reproduction was the sexual, and for long periods only the asexual form occurred. Dr. Daniels illustrated these phenomena and took as an example the proteosoma in birds. In this case they started with infection by parasites which had been rejuvenated by sexual reproduction. An interval of some days took place before any parasites were found in the bird and then only in small numbers; a rapid increase occurred, so that in three or four days after their first appearance 10 or more parasites might be seen in a one-twelfth field. Should the bird survive this, the infection steadily but slowly diminished, and in two or three weeks the parasites again became scanty and the bird recovered. Subsequently parasites might be found in small numbers, but might ultimately permanently disappear. Any parasites seen appeared normal with an average number of spores. The parasites did not increase in number, showing that some influence was at work which, while not arresting the normal multiplication of the individual parasites, caused the destruction of the greater majority of the parasites as they were formed. This influence was not present in the bird when first infected. The phenomenon above referred to might, on the other hand, be explained by assuming that the virility of the parasites became lessened owing to prolonged asexual reproduction. Against this explanation, however, they had the observation that if the blood of the infected bird, whilst but a few parasites were found, was injected into a healthy bird infection resulted, and the same sequence of gradual increase, diminution, and persistence would obtain. Were, again, the blood of the second bird injected into a third a similar phenomenon would ensue, and by the inoculation of a succession of birds proteosoma might be maintained for years without any alternation of sexual reproduction or alteration in the characters of the parasites, showing that it was owing to changes in the host, not to loss of virility of the parasite, that subsidence and disappearance of infection were due. In malaria in man the same series of events occurred, but for how long infection of malaria continued was not yet determined. Blood examination alone could solve the question and more observations were required. In some cases one year in a non-malarial country would see the end of parasites, but in others three years might pass and still malaria parasites might be found in the blood. That this natural cure might be due either to loss of virility in the parasites from repeated asexual reproduction or to a marked increase in the natural resistance and formation of antibodies might be doubted. It was probable that the protective agencies originated and maintained by the parasites themselves were directly concerned in this phenomenon, and should these fail, which might or might not happen, there was no reason against absolute permanency of an infection. The President referred to the development of strains of protozoa differing in their resistance to hostile agencies, and cited as an example strains of Trypanosoma gambiense which proved resistant to atoxyl. The resistance and destruction of the protozoa were, as in bacteria, in the main an affair of alterations in the host, and the time taken varied with different protozoa as it did with different bacteria and with the same bacteria in different hosts. There would appear to be an essential similarity of protozoal infections multiplying asexually and bacterial infections, and in considering protozoa they were prone to lose sight of this fact and to disregard the principles that guide them in bacterial diseases. It must not be forgotten that in countries where reinfection was frequent persons after four years' continuous residence showed a steadily diminishing tendency to become reinfected, whilst after 10 years it was exceptional to find anyone who could be reinfected, showing that a condition inimical to the parasite had been established. That this condition was not a permanent one was proved by the fact that by residence in a non-malarial country where reinfection was not possible, this immunity was lost and reinfection occurred when return was made to a malarial district. After referring to the want of any natural resistance in man to the malaria parasite, and the possibility of intestinal parasites multiplying asexually by fission in the intestine, and throwing off encysted forms which appeared to represent an attempt at a sexual phase, the President concluded by stating that it would be a sounder view to consider protozoa as causes of disease as more on a par with bacteria, and, as with them, to use our efforts to increase the resistance of man to these parasites as well as to endeavour to destroy the parasite.

Dr. A. BREINL (Liverpool) related a case of recurrence of malaria in a patient in which microscopical examinations confirmed the diagnosis after an interval of seven years. The recurrence was coincident with an attack of acute appendicitis. In trypanosomiasis, he said, experimental work showed that after apparent freedom from trypanosomes for even four months artificially induced illness in a monkey caused a reappearance of the parasite in the blood. Dr. Breinl hesitated to compare closely bacteria and protozoa, as the President suggested, and he was convinced that though asexual multiplication might go on for an indefinite period, resistant forms might develop which escape the destructive action of "antibodies" but which after the disappearance of the antibodies resume an asexual multiplication.

Dr. J. L. MAXWELL (Formosa) referred to the difficulty of settling the question of persistence of infection of malaria owing to asexual multiplication in a country where re-infections were possible as in almost all tropical countries. It was therefore in countries such as Great Britain that the matter must be studied.

Mr. JAMES CANTLIE (London) drew attention to the persistence of malaria infection in his own person for three years after returning from the tropics and residing in London. During the hot months of July and August he had persistent fever. During the corresponding period of the fourth year a severe attack of neuritis in the left upper limb seemed to replace the febrile periods of previous years. Drugs had no effect in cutting short the neuritis, and it was only by improving the general health of the host by work in the harvest field that the malaria infection seemed to be

destroyed. Mr. Cantlie advocated residence in a cold, dry climate as that best suited to get rid of malaria infection speedily.

Major J. K. RITCHIE, R.A.M.C., considered that in the elucidation of tropical diseases generally they had to look to the physiological chemist rather than to the bacteriologist for information. He believed that change to a cold climate was the best method of getting rid of malaria.

Dr. C. A. STONE (Dooars, India) pointed out that in certain cases of malaria, especially malignant tertian, quinine failed and he questioned whether quinine acted directly on the parasite or in a more roundabout way.

Mr. J. STUART BROOKE (Allahabad, India) considered that residence in a cold climate was the best means of treating persons infected with malaria.

Dr. O. E. MCCUTCHEON (Assam, India) said that by mosquito nets and quinine man could be protected from malaria, but there were many difficulties in the way, especially in the case of children and newcomers to the tropics. In cases of malignant tertian with attacks of fever every fortnight or three weeks quinine was most unsatisfactory.

The PRESIDENT replied.

A Short Study of the Pathology of the Blood in "Verruga."

Fleet-Surgeon P. W. BASSETT-SMITH, R.N. (Haslar Hospital), having received a number of blood films taken from two acute cases of "verruga" in Lima, Peru, gave a minute description of his findings. He described verruga as an infectious inoculable disease of very limited geographical distribution, being endemic in certain valleys in the western slope of the Andes. From its prevalence in the Oroya district it was sometimes spoken of as Oroya fever. The disease was ushered in with fever, the patient complained of gastric pain and cramps; there were swelling of the joints, enlargement of the spleen, and anæmia. After a time, it might be one month to one year from the initial febrile attack, the characteristic granulations appeared on the skin, the mucous membrane, and the internal viscera. The disease attacked men of all colour, and was fatal to the extent of from 10 to 40 per cent. of those attacked. Isquierdo had described a long headed bacillus as being common in the morbid growths and adjacent vessels. The films examined by Fleet-Surgeon Bassett-Smith showed an intense anæmia with an extraordinary abundance of nucleated red cells and a relatively high leucocytosis. No large protozoal organisms were seen in the blood. The red cells showed variations in size and shape, great irregularity of staining; very large and very small red cells showed most chromatic changes. Nucleated red cells were remarkably abundant, with great variation in the character of the nucleus; double and treble nuclei were common, quatrefoils and cinquefoils were seen, as well as rosette-like appearances. A true mytosis of the nucleus was also seen. Besides the meta-chromatism and the basophilic granules in the cytoplasm there were seen in many cells minute rod-like bodies, frequently showing as diplococci from the intense staining of the ends, or as beading from two or more lying end to end; occasionally small, deeply stained rings or pyriform bodies were made out, but no red chromatin spots. It was not certain that these appearances were due to degeneration of the protoplasm, as they differed from the ordinary basophilic granules of anæmic blood; they suggested extraneous pathological bodies causative of the degeneration. The symptoms of verruga, its limited distribution, specific nature, and profound blood alterations made it probable that the cause might be an intra-corpuscular organism very minute and difficult to stain.

OBSTETRICS AND GYNÆCOLOGY.

THURSDAY, JULY 29TH.

President, Dr. JOHN CAMPBELL (Belfast).

Dr. E. HASTINGS TWEEDY (Master of the Rotunda, Dublin) initiated a discussion on

Endometritis.

He said that he made the following divisions of the disease: clinically, acute and chronic; anatomically, corporeal and cervical. Acute endometritis was always of microbic origin. It might become chronic. He included all non-malignant diseases of the endometrium under the heading of endometritis. As regards treatment, in the acute form one should proceed on general principles, dead areas of infection should be removed and pus pools drained, and the general bodily resistance should be increased. Before douching a specimen of the discharge should be taken for bacteriological examination and the preparation of a vaccine. Ante- and retroflexion should be remedied. The blunt curette was occasionally useful, especially when there had been repair of the perineum which might be injured by passing the hand. The sharp curette was useless and harmful; it opened up fresh avenues of infection and there was great danger of perforation. The symptoms of chronic endometritis were menstrual disturbances, amenorrhœa, dysmenorrhœa, menorrhagia, passage of clots and casts. Referred symptoms were pain in the back, weakness in the loins, weariness on slight exertion, headache, and dyspepsia. Curetting was the method of treatment in all cases, and in doing it he advised preliminary dilatation. After applying the curette he washed out with a Bozemann's catheter and then swabbed with 1 in 3 formalin on a Playfair's probe, taking care to boil the probe after putting on the cotton wool. He put in a wick of gauze which was retained 24 hours. He kept the patient one week in bed. Mild cases might be treated without curetting by swabbing with 1 in 3 formalin or by the injection of iodine, but he would not do the latter oftener than once in three months, and he deprecated the frequent applications of some gynæcologists. No operation for the repair of the perineum or cervix or for displacement of the uterus should be done without a preliminary curetting. For cervical endometritis he advised partial amputation of the cervix or dilatation of the canal and light application of the cautery. Cases of severe hæmorrhage which could not be cured by curetting were best treated by atmocausis, and he had seen no harm result from that treatment.

Professor J. FEHLING (Strasburg) said that he would separate entirely acute endometritis due to gonorrhœa from the other forms. In treating chronic endometritis he would first separate the cases which were due to general disease and which required no local treatment. He thought in some cases the symptoms were due to narrowing of the cervix brought about by over-zealous cauterisation. He advised the wearing of a flexible intra-uterine tube after dilatation or curetting. He was opposed to frequent cauterisation. In performing curettage it was most important first to ascertain the length of the uterus by the sound and to keep the external hand on the fundus while passing the dilator. He had given up atmocausis. He would not amputate the cervix in fertile women. He treated erosion by the application of the sharp spoon.

Dr. ARCHIBALD DONALD (Manchester) said that there were many varieties of endometritis; the most typical form occurred in connexion with mild septic infection after abortion, but cases arose in unmarried women independently of pregnancy or gonorrhœa. In the puerperal case the fundus was large and retroflexed, and these cases were treated on wrong lines by pessaries and plastic operations, curetting being the essential factor in the treatment. The symptoms of endometritis were hæmorrhage, leucorrhœa, dysmenorrhœa, and dragging in the iliac region and hypogastrium. He believed strongly in gauze packing after curetting. As regards erosion, he thought that in the majority of cases it was due to an irritating discharge from the corporeal endometrium; he would treat it by curetting, but in much-thickened cervices he would remove a wedge-shaped piece.

Dr. F. W. KIDD (Dublin) thought that when the cervical canal was inflamed they always found the endometrium to be affected. He had known cases in which permanent amenorrhœa had followed the too vigorous application of the curette.

Dr. F. J. MCCANN (London) said that he combined curetting with a modified rest cure lasting from four to six weeks. He used a blunt curette for the body and a sharp one for the cervix, and swabbed out the cervical canal with 50 per cent. chloride of zinc to check discharge. In acute puerperal endometritis he did not douche, but used swabs to wipe out the uterus.

Dr. THOMAS WILSON (Birmingham) considered that the only indication for curetting was hæmorrhage, and that it was useless for pain or discharge. He found that in all cases in which the cervix was dilated to above No. 13 Hegar, laceration at the internal os occurred. After curetting he applied strong iodine fortnightly for three months.

Dr. THOMAS CULLEN (Baltimore, U.S.A.) said that during four years he had all the uterine scrapings which had been

removed in a large hospital practice examined by a pathologist, and in only 48 cases was there evidence of endometritis. From the histological standpoint there was no difficulty in the diagnosis, but clinically it was often impossible to say whether endometritis was present. Uterine discharge was often due to a general systemic weakness, and it disappeared when attention was paid to the general health. He used bladed dilators.

Dr. ALFRED SMITH (Dublin) said that in puerperal septic endometritis he used the finger and the curette after abortion. He used no intra-uterine treatment in the gonorrhœal form. To prevent laceration he performed a preliminary dilatation by tent.

Dr. HENRY JELLETT (Dublin) said that he used formalin. He had seen occlusion of the cervical canal after the use of chloride of zinc. He agreed that curetting should accompany plastic operations for retroflexion, and he combined it with Alexander's operation for moveable retroflexion, and ventral fixation when the uterus was adherent.

Dr. F. EDGE (Birmingham) dwelt on the advantages of hollow Hegar's dilators, which prevented any possibility of pushing fluid up into the tubes.

Dr. SAMUEL J. CAMERON (Glasgow) said that the most difficult cases to cure were those of gonorrhœal origin, and in these it was unwise to curette.

Dr. ALEXANDER W. RUSSELL (Glasgow) urged the importance of sexual rest in cases of endometritis.

Dr. T. B. GRIMSDALE (Liverpool) agreed with Dr. Donald that endometritis was the most important factor in cases of retroflexion.

Dr. J. MUNRO KERR (Glasgow) had found with Dr. Cullen that in many cases regarded clinically as endometritis little change could be found when the endometrium was examined histologically. Cases in which curetting failed often were really cases of metritis.

Professor HENRY CORBY (Cork) said that he used bladed dilators, and thought the special value of gauze packing was that it stimulated the uterus to contract.

Dr. E. J. MACLEAN (Cardiff) thought that lacerations began when Hegar's dilators above No. 9 were used. He had found that cases in which packing was used did not have so easy and afebrile recovery as when a pack was not put in.

The PRESIDENT said that it was impossible to clear out the puerperal uterus by the finger. He used the sharp curette for curetting.

Dr. HASTINGS TWEEDY, in reply, said that he would draw no distinction between acute endometritis due to gonorrhœa and that due to other forms. He used gauze wrung out of 2 per cent. carbolic acid for packing.

Dr. LOUISE MCILROY (Glasgow) gave a lantern illustration of a series of slides showing

The Development of the Epithelial Elements of the Ovary.

The investigations which they illustrated extended over some months and were assisted by a grant from the British Medical Association. The ovaries used were from human embryos as well as from those of the puppy, kitten, and pig. The speaker claimed to have proved that the so-called Pflüger's tubules were really Graafian follicles with a hollow centre due to the ovum being at a different level or having dropped out. She pointed out that many of the cells in the stroma bore a marked resemblance to those of chorion-epithelioma. She considered that the rabbit's ovary, which was often used, was inferior for research to those of the animals she had investigated.

Dr. DAVID WATERSTON (Edinburgh) discussed the paper.

Dr. SMALLWOOD SAVAGE (Birmingham) read a paper on

An Ovarian Tumour Clinically Malignant Arising from the Overgrowth of Lutein Cells.

He said that there were three cases of such tumours on record and gave references and particulars. In his case the patient was 38 years of age, a widow and the mother of four children. Menstruation had been regular up to three months before, since when there had been slight irregular losses. There had been pain and loss of flesh for seven weeks. The patient lived five and a half months after operation. The specimen consisted of the right ovary enlarged to the size of a fœtal head. Microscopically some cells were degenerated and vesicular; the nucleus was pushed to the side; the whole structure strongly resembled that of the corpus luteum. The tumour was undoubtedly malignant, the patient dying from cachexia, but without evidence of local recurrence. There was no post-mortem examination.

Professor FEHLING said that he had found that in a case of this kind there was a history of hydatid mole.

Dr. MUNRO KERR thought that in all cases of malignant disease of the ovaries the uterus should be removed.

Mr. H. T. HICKS (Derby) alluded to the association with hydatid mole.

Dr. LOUISE MCILROY and Dr. EDGE also contributed to the discussion.

FRIDAY, JULY 30TH.

Professor FEHLING (Strasburg) read a paper on

The Treatment of Cases of Contracted Pelvis.

He said that the earliest prophylactic treatment was induction of premature labour as advised by Denman. He mentioned special feeding, designed to reduce the size of the child, as suggested by Prochownik, and said that experiments on animals had confirmed Prochownik's views. The putting on of fat took place in the last six or eight weeks of pregnancy, and the dieting would be more likely to have effect if applied then. The second way of obtaining a small fœtus was by the induction of premature labour, and this was especially useful in the simple flat pelvis. He would only use it in multiparæ. He generally induced labour between the 35th and 37th week by using hydrostatic dilators, seeking to obtain cephalic presentations as far as possible. The fœtal mortality in his clinic had been 24 per cent. Walcher's position gave an increase of the conjugate of 1 to 1·5 centimetres, and he had used it successfully in cases of after-coming head. The best means, however, of increasing the available space was by pubiotomy; this gave, with a space between the bones of 4 to 6 centimetres, an increase in the conjugate of ½ to 2 centimetres. For cases in private practice he advised high forceps, and even in some cases perforation of the living child when required in the interest of the mother, but in the clinic if the child's life showed signs of danger he chose Cæsarean section. As regards the technique of pubiotomy, he used Doederlein's or Bumm's; in the former the needle was passed from above downwards, a small incision being first made in the skin; in the latter the needle was entered from below between the labium minor and majus; in each case the Gigli wire saw was used, and the needle was guided by a finger in the vagina. He awaited spontaneous labour after dividing the bone, placed a tampon in the vagina for 24 hours, and kept in a self-retaining catheter for 48 hours. His maternal mortality has been 3·2 per cent. and the fœtal mortality 9·6 per cent. He preferred pubiotomy to symphysiotomy, as the latter gave rise to more bleeding and was more likely to be attended by damage to the urethra and bladder, and he had used pubiotomy after inducing labour if the head became impacted. He mentioned the newer method of extra-peritoneal Cæsarean section, in which, after the abdominal incision, the peritoneum was stripped up off the lower uterine segment; he preferred the longitudinal incision and did not think it mattered if the peritoneum was accidentally opened if the opening was at once closed. The operation must be done when the lower segment was well stretched, and was not suitable for the early stage of labour.

Professor MURDOCH CAMERON (Glasgow) said that pubiotomy left permanent lameness, and he preferred induction of labour by bougies.

Dr. MUNRO KERR had not found induction of labour satisfactory, and the fœtal mortality from high forceps in his hospital had been 50 per cent. He emphasised the great importance of leaving cases to nature as long as possible, and he had seen spontaneous labour with a conjugate of 3 inches. He thought pubiotomy extremely valuable and that it was especially indicated in cases where one thorough attempt at forceps delivery had proved unsuccessful. Pubiotomy was very undesirable in primiparæ, and there were cases in which it was justifiable to perforate the living child, especially when the genital canal was infected.

The MASTER OF THE ROTUNDA said that the pelvis was often inaccurately measured. There was only one reliable means of measurement, and that was Skutsch's pelvimeter, which required an anæsthetic. In serious contraction Cæsarean section was the only operation possible, but it must not be forgotten that the uterine scar might be a source of subsequent danger. They should act when the fœtal heart

quickened and not wait for slowing, which was a sign that death was impending and they would be too late. There were still some cases in which perforation of the living child would be justifiable in private practice.

Professor FEHLING, in reply, found that patients could walk perfectly well after pubiotomy even when there was failure of bony union. He measured the pelvis with fingers under anæsthesia.

Professor MURDOCH CAMERON read a paper on

Cases of Dystocia due to Ventral Fixation of the Uterus.

He narrated two cases; in each the os was high up and could only be reached by introducing the whole hand into the vagina. Each case had to be treated by embryotomy. He considered that in all cases in which ventral fixation was performed the tubes should be tied and divided to sterilise the woman and avoid these risks.

Professor JACOBS (Brussels) thought that ventral fixation was a very dangerous operation. He had seen three fatal cases of ileus due to strangulation by the fixation band.

Dr. MCCANN advised that the fixation should be done low down on the anterior wall to prevent such an accident.

The section then joined with the Ophthalmological Section to consider the report of the British Medical Association Committee on Ophthalmia Neonatorum. The debate is reported under the proceedings of the latter section.

ANATOMY AND PHYSIOLOGY.

WEDNESDAY, JULY 28TH.

President, Professor C. S. SHERRINGTON (Liverpool).

The PRESIDENT gave a brief introductory address, in the course of which he referred with regret to the absence of Professor Symington. He said that it had been decided to hold a joint meeting of anatomists and physiologists this year, and in view of this the officials of the section had sought for discussion subjects which might be discussed by the mixed audience, from both the structural and functional points of view.

Professor A. F. DIXON (Dublin) then read a paper on

The Anatomy of the Achondroplasic Skeleton.

This was illustrated by lantern slides, photographs, and dried bones. Professor Dixon referred in particular to two adult achondroplasic skeletons which he had examined in detail. The characteristic deformities were found to be most marked in bones developed from cartilage, although membrane bones did not escape. Of the former, those bones which began to ossify early were most affected. Hence deformities were very marked in the long bones, while short bones, as those of the carpus and tarsus, showed very little abnormality indeed. Further, the amount of deformity in the different parts of a long bone bore some relation to the relatively early times at which ossification appeared in them. Thus the shaft of a long bone was the seat of chief deformity in it; the epiphyses were but little different from normal. The striking changes found in long bones were these. The shafts were markedly shortened and thick, while the ends were almost normal in size. The natural curves were exaggerated; muscular markings were unusually prominent. In the skull the base was found to be much contracted, especially in an antero-posterior direction, while the membranous part of the cranium, actually very little affected, appeared by contrast much expanded. Owing to this shortening of the base the face was somewhat retired beneath the overhanging frontal region. The skull base was at a relatively high level, as if thrust up into the cranial cavity, so that the foramen magnum was about on a level with the external auditory openings. The foramina in the skull base were abnormally small. The different angles of the base were much changed. The clivus, the most contracted part of the base, presented an unduly steep slope. A variable amount of ankylosis between the skull and the atlas was found, although no obvious limitation of nodding movement might have been observed during life. Professor Dixon, in speaking of achondroplasia as particularly affecting bones ossified in cartilage, drew attention to the fact that he had found the clavicles to be practically unaffected. Indeed, in one case clavicle and radius were of the same length.

Professor C. J. PATTEN (Sheffield) asked as to Professor Dixon's experience of an absence of symmetry between corresponding bones of opposite sides in cases of achondroplasia.

Dr. D. WATERSTON (Edinburgh) referred to cases of imbecility with skulls of a Mongolian type. He briefly described the changes in shape found in these and compared them with those found in achondroplasia. He remarked upon the absence of change in growth in the case of the vertebral column, coupled with great changes in the skull in the achondroplasic skeleton, and asked whether Professor Dixon had found associated changes in the genital glands, such as occurred in acromegaly.

Dr. R. H. SCANES SPICER (London) stated that he had met with patients with adenoids and whose heads had shapes resembling achondroplasic skulls, and asked as to any relationship between these affections, or between achondroplasia and syphilis. He stated that he had met with cases that were of the achondroplasic type in childhood, in which at about 17 to 21 years of age acromegalic features came to predominate.

Dr. N. C. RUTHERFORD (Edinburgh) asked how the membrane bones of the face were affected, and spoke anent the alleged connexion between the pituitary body and achondroplasic changes.

Professor PETER THOMPSON (London) also spoke of the condition of the hypophysis and its possible effect on growth.

The PRESIDENT remarked upon the greatly developed markings for muscular attachments in some bones shown by Professor Dixon. He would expect them to be marked in some proportion to the duration of the muscular strain upon them, and hence would look to find them prominent in the case of postural muscles, such as were attached to the femora.

Professor DIXON, replying, said he had deliberately confined his paper to cases exhibiting symmetrical deformities. In the two cases described he had not recognised any changes in the genital glands. The brain showed a slight degree of hydrocephalus. The cranial capacity was very variable. The membrane bones of the face were slightly affected and the entire face seemed to be pushed back underneath the cranium. He had not found microscopic changes in the pituitary body. The cancellous tissue resembled that of normal bone. The condition of achondroplasia was found in families, but was probably not inherited through the female line.

Dr. ROBERT H. SCANES SPICER (London) read a paper on

Some Points in the Mechanics of Respiration.

For the convenient illustration of some of his remarks he showed a rough model representing the larynx and vertebral column, showing alterations in shape and relations of these parts during respiration. Costal and abdominal types of respiration were described and compared, the latter being condemned as bad. It prevented proper voice-production and was chiefly responsible for voice troubles in singers and speakers and tended to impair health. Different views had been held as to the movement by which the vocal cords were stretched. Dr. Scanes Spicer held that this was a movement of the cricoid cartilage upon the thyroid and not *vice versâ*. Respiration involved strains upon different parts of the larynx. These were in a degree limited or neutralised by movements occurring around the transverse crico-thyroid axis, and hence its importance. In proper breathing (costal type) the larynx practically, he thought, made no excursion up and down, and the vertebral column tended to straighten itself out. In abdominal breathing, especially if deep, the vertebral column behind the larynx had its forward convexity increased, the larynx underwent an up-and-down excursion, and at the same time was so tilted around its transverse axis that the cricoid cartilage projected backward. The bosses on the back of this, uncovered by muscle, were brought unduly against the vertebral column, and by their movement (as parts of the larynx) up and down over the sharp points and ridges on the front of the column a mild but long-continued frictional irritation was kept up, which probably played a part in determining the incidence of cancer in this situation.

Professor THOMPSON declined to regard the model as correctly representing the movements occurring in nature. It was easy to move a model and to say, "This is what occurs." It was well to hesitate in accepting that as correct. He objected to Dr. Scanes Spicer's animadversions upon abdominal respiration, regarding it as not vicious but normal, and agreed with Professor Keith's views. It was the type which obtained in quiet breathing, as in sleep. Costal respiration came markedly into play when an extra effort

was required. The diaphragm took part in both types; it descended and it raised the lower ribs. He knew of no bony points on the vertebral column such as Dr. Scanes Spicer mentioned. In the recent state the front of the column was made smooth by the anterior common ligament and other soft tissues.

Questions were asked and remarks were made by the PRESIDENT, Dr. J. S. DICKEY (Belfast), Dr. RUTHERFORD, and Dr. WATERSTON as to the effect of costal respiration on laryngeal movements, the relative frequency of throat cancer in the two sexes, and in relation to pregnancy in view of the prevailing types of respiration involved.

Dr. SCANES SPICER, in reply, recommended the use of the terms "belly-breathing" and "back-breathing" instead of abdominal (diaphragmatic) and costal. Back-breathing was the right type and should be cultivated. He quoted Sir Felix Semon's figures as to the frequency of throat cancer in the two sexes.

Dr. HUGH MACLEAN (Liverpool), in a paper on

Phosphatides,

indicated how little was definitely known of these bodies. Widely distributed, he said that they existed in all tissues, especially such active tissues as brain and heart, and they could be extracted by suitable agents—e.g., ether. They were nitrogenised, phosphorised fatty acids, of the rôle of which in metabolism but little was known. They were very oxidisable, and acted as aggravators of hæmolytic poisons. They occurred in yelk of egg in variable quantities. For experimental purposes he obtained three grammes of phosphatides in an ethereal extract of 100 hen's eggs. With this he made many experiments to ascertain the chemical structure and relations of phosphatides. As a result, he concluded that they probably played an important part in the normal desaturation of fatty acids in the body. They could be divided into various groups according to the proportions of nitrogen and phosphorus present. Of the first group, in which the proportions of nitrogen and phosphorus were as 1 to 1, lecithin was the best-known example. Of many of the groups practically nothing was known. Dr. Maclean was unable to determine in detail the nitrogen combinations in phosphatides. His observations, however, satisfied him that the generally accepted formula of the phosphatides' chemical structure could not be taken as entirely correct.

Dr. REID HUNT (Washington, U.S.A.) described experiments which he had made upon the phosphatides to ascertain their chemical structure.

Professor B. MOORE (Liverpool) mentioned hypotheses as to the different composition of phosphatides and referred to their effects upon blood pressure and metabolism.

Professor T. H. MILROY (Belfast) made a few remarks.

There was general agreement as to the slightness of knowledge about phosphatides and the width of the field which they offered for further research.

PATHOLOGY.

THURSDAY, JULY 29TH.

President, Professor W. ST. CLAIR SYMMERS (Belfast).

The section was joined with the Section of Hæmatology and Vaccine Therapy for a discussion on "The Early Diagnosis and Treatment of Pulmonary Tuberculosis." We report this debate under the proceedings of the latter section.

FRIDAY, JULY 30TH.

Dr. A. E. MOORE (Cork), Vice-President of the section, took the chair, whilst the President of the section read a paper by Dr. L. COBBETT (Cambridge) on

The Portals of Entry of Tubercle Bacilli into the Body in the Causation of Phthisis.

Dr. Cobbett said that the object of his experiments was to find out (1) whether bacteria could gain entrance to the lungs directly through the air passages; and (2) whether, after being absorbed from some part of the alimentary canal, they could pass at once through the lymphatic glands and gain entrance to the lungs. The general intention of the experiments was to throw light on the question of the portals of entry of the tubercle bacilli into the human body in the causation of phthisis. The experiments were divisible into three groups—namely, those made (1) with particles of carbon; (2) with bacillus prodigiosus; and (3) with bacillus tuberculosis. The animals used were guinea-pigs, except in a few instances, in which rabbits and mice were employed. The results might be briefly summarised as follows: (1) Feeding experiments with particles of carbon (25 experiments). (*a*) Young guinea-pigs fed with Indian ink or lamp-black on one or more occasions showed no pigmentation of mesenteric or cervical lymphatic glands, and no pigmentation of lungs or bronchial glands, except in two experiments, when the conditions were such as did not exclude the possibility of the pigment being inhaled directly into the lungs. (*b*) Feeding adult guinea-pigs in a similar manner resulted in no pigmentation of the mesenteric or cervical glands nor of the lungs or bronchial glands; such pigmentation as was found in these latter situations in some of the guinea-pigs fed with carbon being equalled in other animals of corresponding age which served as controls, as some degree of pigmentation of lungs and bronchial glands in normal guinea-pigs of 500 grammes and over was found to be common in Cambridge. The results of these experiments were directly opposed to the belief that pigmentation of the lungs was of intestinal origin, and suggested the possibility that spontaneous pigmentation might sometimes have been mistaken for the result of an experimental feeding with carbon. (2) Experiments with bacillus prodigiosus. (*a*) Cultures were made from a large number of organs and glands of 26 animals exposed to a spray containing the bacillus. In all the more recent experiments the spray used was of the finest description, and was continued only for one or a few minutes. It scarcely sufficed to produce any perceptible wetting of the coats of the animals. Bacillus prodigiosus was cultivated from the extreme marginal portions of the lung of all these animals in which the interval between spraying and death did not exceed 15 hours. In two instances the animals ceased to breathe within three and five minutes respectively of the commencement of the exposure to the spray. The bacillus did not fail to reach the lungs after the œsophagus had been ligatured in two places and divided. The bacillus reached the bronchial glands in ten hours, if not earlier, but was not found in them after the fifteenth hour. It was twice found in the mesenteric glands and once in the cervical. It was invariably absent from other parts of the body, except in the case of one of the earlier animals, which was entirely exceptional. (*b*) 14 guinea-pigs were made to swallow large quantities of bacillus prodigiosus, they were killed after intervals of from 3 to 14 hours, and cultures were made from their organs and glands. In the case of about half the guinea-pigs one or two colonies appeared in one or more of the four tubes sown copiously with lung emulsion. It was, however, by no means certain that these reached the lungs after being absorbed from some part of the alimentary canal, for it seemed probable that the bacilli did not survive long enough in the stomach and intestines to do so—only rarely could a colony of bacillus prodigiosus be cultivated from their contents; and in not one of these experiments did bacillus prodigiosus appear in the cultures from the mesenteric glands. Once, however, a single colony appeared in a tube sown from the submental gland. Observing the frequency with which guinea-pigs make a choking noise when feeding, and especially when fed artificially, there was no difficulty in believing that the bacilli in question had reached the lungs directly by the air passages. Intertracheal injections of small quantities of these bacilli were followed by their appearance in the margins of the lungs. (3) Experiments with bacillus tuberculosis. 13 feeding and 14 inhalation experiments were undertaken. The former were by no means complete. The results were, on the whole, similar to those obtained after feeding with bacillus prodigiosus, and their interpretation awaited further experiments. When guinea-pigs were fed with tubercle bacilli and allowed to live some weeks tuberculosis appeared first in the mesenteric or cervical lymph glands and no disease appeared in the lungs until it became generalised elsewhere. The spraying experiments clearly showed that tubercle bacilli suspended in the air could readily penetrate deeply into the lungs. When the animals exposed to the spray were killed a few minutes or hours after and their emulsified organs injected into other guinea-pigs tuberculosis was invariably produced by the lung emulsions. A much less severe tuberculosis was in some cases produced by the bronchial or mesenteric glands. When guinea-pigs exposed to the spray of tubercle bacilli were allowed to live from one week to a month and then killed and examined tubercle bacilli were found in large numbers in

the lungs before any lesions appeared anywhere. Elsewhere they were absent, except in small numbers in the bronchial and cervical lymph glands. Tuberculous lesions first appeared in the lungs, then in the bronchial glands, after which they were found in the portal lymph gland and the spleen. The mesenteric glands invariably escaped tuberculosis, but in one case (out of ten) three tubercle bacilli were seen 14 days after exposure to the spray. In conclusion, Dr. Cobbett said that the experiments as a whole were not yet completed, but they clearly showed already that in the guinea-pig bacilli suspended in the air readily passed down the bronchi deeply into the lungs. The experiments were not sufficiently advanced to justify any conclusions as to the course of infection which followed the introduction of tubercle bacilli into the alimentary canal.

The PRESIDENT pointed out that Dr. Cobbett had obtained results diametrically opposed to those yielded by the experiments of himself and Sir William Whitla, and consequently the final conclusions of Dr. Cobbett would be awaited with great interest by those who maintained, like himself, that food and not air was the usual vehicle of the tuberculous virus.

Dr. W. FORD ROBERTSON (Edinburgh) and Dr. MARGARET C. W. YOUNG (Edinburgh) presented their observations made in connexion with

The Protozoal Origin of Tumours.

The communication resolved itself into a demonstration of three distinct series of lantern slides; the first giving schematic representations of the life cycles of hæmamœba and other parasitic protozoa, contrasted and compared with the hypothetical life cycle of Robertson's silver-cyanide protozoon (for which the name "neucloamœba" was suggested). The second demonstrated the cyanide-fast bodies observed in Jensen's mouse tumours, and the third similar bodies found in cancer cells in the human subject—these last two series being arranged to demonstrate appearances and phases in agreement with stages in the hypothetical life cycle of the authors' micro-organsim. A comprehensive series of water-colour drawings of the microscopical appearance described by the authors, and several microscopical sections were exhibited in an adjoining room.

Dr. J. M. BERNSTEIN (London) pointed out that in the early stages of the study of pathogenic protozoa, silver-staining methods were deemed essential for their demonstration, but that subsequently it was found possible to avoid the fallacies introduced by silver methods by employing the eosin methylene-blue compound devised by Romanowski and its various modifications, such as Leishman's. He inquired whether Dr. Robertson's protozoa could be demonstrated by these stains.

Dr. ROBERTSON explained that his bodies could only be satisfactorily shown by the special silver process which he used, and in which all the fallacious appearances inseparable from other silver processes were eliminated.

Professor E. J. MCWEENEY (Dublin) read a paper on

The Value of Coloured Substrata for the Detection and Differentiation of Members of the Typho-coli Group.

The speaker said that in view of the great epidemiological importance of typhoid carrier cases and of the etiological relationship of non-lactose-fermenting bacilli of the Gaertner group to outbreaks of meat poisoning, any method which would admit of the speedy recognition of such organisms on our culture plates would constitute a welcome addition to bacteriological technique. There were two ways of accomplishing the desired object—viz., by substrata, which should either (1) cause the bacteria which do not ferment lactose (typhoid, paratyphoid, dysentery) to assume a distinctive appearance, or (2) suppress as completely as possible the growth of the ordinary lactose fermenting coli organisms, so as to allow the relatively few non-lactose fermenters to appear prominently on the plate. The methods are not mutually exclusive and may be combined in the same medium. In order to test the relative values of the several methods that had recently been proposed, the speaker had been cultivating fæces from a typhoid case on the following media: 1. The original Drigalski medium in which whilst crystal violet was used to inhibit ordinary putrefactive and air germs, no effort was made to suppress bacillus coli. 2. Endo's fuchsin-agar which yielded the most striking distinction between the typhoid (or paratyphoid) and coli colonies (typhoid colourless or nearly so, coli bright red), but which did not suppress the growth of coli. 3. A modification of No. 2 by Gaehtgens, which consisted in adding caffeine, a substance known to inhibit bacillus coli. 4. Conradi's new picric acid brilliant green agar. 5. A modification of this by Colonel H. B. Fawcus, described in the *Journal of the Royal Army Medical Corps*, and consisting essentially in the addition of lactose and bile-salt with a less strongly acid reaction. 6. China green agar—viz., an ordinary 3 per cent. agar neutralised to + 13 on Eyre's scale, with 1·4 to 1·5 cubic centimetres of a 0·2 per cent. solution of China green (Grübler) added to each 100 cubic centimetres contained in a flask. This colouring matter was introduced into bacteriology by Werbitzki in the *Archiv für Hygiene* for this year. The speaker exhibited two series of cultures on 6-inch Petri plates on each of these media. One series was inoculated with the fæces of a typhoid case containing numerous typhoid bacilli, and the other for contrast with the fæces of a healthy suckling fed solely on mother's milk and containing nothing but Escherich's aerogenes type of bacillus coli together with yeasts. The cultures were of the same age and the same amount of stool was used for each. The most satisfactory results were obtained with the China green agar, which suppressed about 75 per cent. of the coli colonies, whilst the survivors were much inhibited in their growth, remaining small, opaque, and point-like. The typhoid colonies, on the other hand, developed most luxuriantly and were decidedly more numerous than on any of the other media. Their appearance, moreover, was very characteristic, being of a delicate transparent green, deeper in the centre, with a thin filmy peripheral layer that spread out like a veil over the substratum and presented under a low power a typically sulcate appearance. The only obvious drawback to this medium was the fact that the motility of the bacilli taken from these typhoid colonies was much diminished and they presented a filamentous aspect. Subcultures in broth, however, were in all respects typical by the next day and could be subjected to the usual agglutination and other tests. Next to the China green in point of value came the Conradi brilliant green picric acid medium, which admitted of unrestricted growth of typhoid organisms whilst largely restricting that of bacillus coli. The distinction, moreover, was fairly well marked, the coli colonies being of an opaque greenish-yellow, whilst those of typhoid were more transparent, colourless, larger, and thinner. Their motility and agglutinability were preserved. The speaker's experience of the Fawcus modification being founded on the results obtained from a single batch of medium was not large enough to enable him to make a positive statement as to its value. So far, however, he had noticed that together with a very decided inhibition of bacillus coli the typhoid colonies also were to some extent interfered with, and did not assume definitely marked character until 48 hours had elapsed after inoculation. Nor did they seem so numerous as on the China green. The presence of a cloudy appearance around the coli colonies did not appear to possess any marked advantage, as there was little danger of mistake. As to the original Drigalski and Endo media it was unnecessary for him to speak, as the results were such as might have been expected. On both, the coli colonies occupied the plates to such an extent as to leave little room for the development of typhoid, unless indeed the latter were pretty numerously represented. It was interesting to observe that the Endo medium permitted the growth of large numbers of yeast colonies which did not come up on any of the other media. With a view to demonstrate the appearances of the several members of the group on these media in pure cultivation, he had prepared and now demonstrated a series of plates inoculated with bacilli typhosus, coli, lactis aerogenes, paratyphoid B and A, the speaker's strain of Gaertner's bacillus from the Limerick food-poisoning case, Ratin's and the Flexner and Shiga types of dysentery. The inhibition bacillus of coli was strikingly evident on the Conradi, Fawcus, and China green media, and it was interesting to observe that the two dysentery types were equally repressed. There was no distinction between the Gaertner and Ratin organisms, both of which grew luxuriantly on all the media. In view of the unsatisfactory nature of our present methods of isolating typhoid bacilli from suspected milk, he had been experimenting by infecting milk in quantities of 100 cubic centimetres with typhoid fæces known to contain the bacilli, adding the same amount of China

green solution as proved suitable for plate cultures (1·5 cubic centimetres of a 0·2 per cent. solution), and setting aside at 37° to develop for 24 hours, and then plating out on Drigalski's and Endo's media. So far, however, he had not succeeded in obtaining typhoid enrichment in this way. He concluded by recommending China green to the attention of those interested in this class of work.

Dr. Moore then vacated the chair in favour of Professor McWeeney, and

Professor BENJAMIN MOORE (Liverpool) and Dr. W. R. STENHOUSE (Liverpool) described the results of their experiments on

The Growth of the Bacillus of Tuberculosis and other Micro-organisms in Increased Percentages of Oxygen.

In the course of their work they had encountered many difficulties owing to the gradual escape of oxygen from the apparatus in which their culture tubes were exposed. Finally, by placing the cultivations in a glass dish and inverting over them a bell jar, sinking its mouth into a ring of putty, and then filling up the space between the wall of the bell jar and the wall of the containing glass dish with mercury, they were able to maintain an atmosphere of pure oxygen for a considerable period. 37 organisms in all were investigated as to their rate of growth in atmospheres containing varying percentages of oxygen, and of these three species—viz., bacillus tuberculosis, bacillus pestis, and staphylococcus pyogenes aureus—were completely inhibited in their growth. The remaining 34 species differed in no respect from the control cultivations grown under ordinary atmospheric conditions.

Dr. W. S. LAZARUS-BARLOW (London) then occupied the chair and commented upon the fact that of 28 species of bacteria which he had investigated with reference to radio-activity two only—bacillus tuberculosis and staphylococcus pyogenes aureus—had exhibited radio-active properties when placed in contact with the photographic plate, bacillus pestis being absent from the series he examined.

Dr. W. J. WILSON (Belfast) read a paper on

Heterologous Agglutinins, more particularly those Present in the Blood Serum of Cerebro-spinal Fever and Typhus Fever Cases.

His results confirmed and extended observations previously made by Professor Symmers and himself in regard to the agglutination of organisms of the typhoid, colon, and alcaligenes groups by the blood serum of cerebro-spinal fever cases. These heterologous agglutinins are not removed from the blood serum on saturation of the latter with the infecting micro-organism (i.e., the meningococcus), and on this account must be distinguished from group agglutinins (Pfaundler) and mitagglutinins (Wassermann). The heterologous agglutinins increase during the disease and their course of development follows closely that of the meningococcal agglutinins, though to this rule there are many exceptions. They may still be evident in a very high dilution of the serum—e.g., 1 in 2000. The blood serum of a horse which had been immunised against the meningococcus was much richer than normal horse serum in agglutinins, not only for the meningococcus but also for the bacillus aquatilis alcaligenes. Of 31 specimens of serum taken from Belfast cases of typhus fever and examined as to their action on the bacillus typhosus 18 gave a positive and 13 a negative reaction with a 1 in 50 dilution of the serum. Seven cases of typhus fever had five times the agglutinative power of normal serum on a variant form of the bacillus coli communis which had been isolated from the fæces of one of the cases.

After some remarks on this communication by Dr. LAZARUS-BARLOW and Professor MCWEENEY had been replied to by Dr. WILSON, a paper detailing the results of studies upon

The Etiology of Bacillary Dysentery

was communicated by Dr. MARC ARMAND RUFFER (Alexandria) and Mr. J. GRAHAM WILLMORE (Gabel El Tor). The material for their investigations had been derived from Mussulmans landed at El Tor during the pilgrimage season and amounted to many hundreds of cases. Etiologically considered, these cases belonged to two distinct groups—amœbic dysentery (due to infection with amœba histolytica alone or in association with a bacillus provisionally designated bacillus dysentericus "El Tor No. 1") and bacillary dysentery. Of this latter group Dr. Ruffer and Mr. Willmore recognised five types, according to the organism apparently concerned in the infection: (*a*) bacillus dysenteriæ of Shiga-Kruse type (comparatively rare); (*b*) bacillus pseudo-dysentericus "D" of Kruse; (*c*) bacillus dysenteriæ of Flexner (one case only); (*d*) bacillus dysentericus El Tor No. 1; (*e*) bacilli resembling but not identical with those already mentioned. The commonest type of dysentery amongst Musselman pilgrims was that due to bacillus dysentericus "El Tor No. 1." This form could not be distinguished by clinical signs or post-mortem appearances from cases due to bacillus dysenteriæ of Shiga-Kruse, and the diagnosis depended entirely on the isolation of the bacillus or on the result of agglutination experiments, as those cases agglutinated bacillus El Tor but not the Shiga-Kruse bacillus. The diagnosis was exceedingly important, as treatment with the Shiga Kruse antiserum was useless, although this serum was of extreme value in cases of dysentery due to the Shiga-Kruse bacillus. Dr. Ruffer and Mr. Willmore devoted themselves to a most complete and careful study of its cultural, biochemical, and pathogenic characters. The various serum reactions, agglutination, absorption, and complement deviation of bacillus El Tor were next detailed, from which it appeared that it was most nearly allied with Kruse's bacillus pseudo-dysenteriæ D.

Professor MCWEENEY complimented Mr. Willmore on the care and completeness with which he had studied the various forms of bacillary dysentery. The outcome of this work seemed to be that as the result of the complex relations that existed between the intestine and its flora an indefinite number of inter-connected bacillary races or sub-species were evolved. Some of the more commonly occurring of these had been isolated and studied under the names of Shiga, Flexner, pseudo-dysentery, bacillus El Tor No. 1, and so forth, but these were, in his opinion, certainly linked together by an unbroken chain of intermediate forms, and it was only by painstaking studies, such as that brought forward by Mr. Willmore, that the links which were now missing from the chain would be supplied.

The work of the section was then declared at an end in a short valedictory address by Dr. LAZARUS-BARLOW.

DERMATOLOGY AND ELECTRO-THERAPEUTICS.

THURSDAY, JULY 29TH.

President, Dr. W. CALWELL (Belfast).

The following cases were exhibited:—By the PRESIDENT: (1) Adenoma Sebaceum; and (2) Pityriasis Rubra Pilaris. By Mr. G. L. ST. GEORGE (Lisburn) and Dr. G. MONCRIEFF MELVILLE (Youghal): Acanthosis Nigricans. By Dr. S. W. ALLWORTHY (Belfast): Cutaneous Actinomycosis. By Dr. J. CAMPBELL RANKIN (Belfast): (1) Xeroderma Pigmentosum; (2) Lupus Vulgaris, showing result of a plastic operation on the nose; (3) Epithelioma of the Wrist and Senile Keratosis of the Face. By Dr. F. MCLIESH (Belfast): Lupus Vulgaris, of short duration, with ectropion.

A large number of excellent casts and photographs of skin diseases were exhibited in the Pathological Museum by Dr. G. G. STOPFORD TAYLOR (Liverpool) and Dr. R. W. MACKENNA (Liverpool).

Sir MALCOLM MORRIS (London) then opened a discussion on

Mucous Membrane Lesions in Cutaneous Disease.

He said that affections of the mucous membranes might be considered under the headings of (1) primary and (2) secondary. The latter group could be subdivided into (*a*) cases in which the mucous membranes were affected independently of the skin; (*b*) cases in which they were affected by extension from the skin. Having briefly referred to the specific fevers, in all of which the mucous membranes were involved, he enumerated the various drugs—arsenic, chloral, belladonna, mercury, salicylates, iodides, and others—in which lesions occurred in the mucous membranes. Among general infections, syphilis imitated almost every form of disease, and characteristic lesions were found in the mucous surfaces in the primary and secondary stages of the disease. Leucoplakia was an independent disease and not necessarily syphilitic in origin. In lupus vulgaris the starting point was often inside the nose; in 70 to 80 per cent. of Finsen's cases the mucous membranes of the mouth or nose were affected. An important aid to the diagnosis of lupus of the mucous membranes was the application of adrenalin, as suggested by Dr. St. Clair Thomson, the blanching of the mucous membrane causing the lupus nodules to stand out clearly. Lupus might extend up the lacrymal

duct, the pharynx and larynx might be involved, and the tympanic membrane might be affected through the Eustachian tube. Lupus of the tongue was very rare. Sir Malcolm Morris had seen a case in which the vagina and os uteri were the sites of lupus. It was now thought probable that leprosy tended to show itself first in the nose and pharynx. He had recently had a case of early anæsthetic leprosy in which an ulcer was found in the left nostril, and bacteriological examination showed the presence of acid-fast bacilli in large numbers. Leprous nodules might form in the conjunctiva, or the tongue might be affected with lesions resembling syphilis. In anæsthetic leprosy the mucous membrane of the palate and other parts might be anæsthetic. As regarded skin diseases proper, the erythemata resulted from intestinal toxæmia; erythema multiforme was often ushered in by congestion of the throat and pharynx. In urticaria, the eyelids, lips, mouth, tongue, glottis, and vulva might be the sites of wheals. Urticaria might alternate or be concurrent with asthma. In urticaria pigmentosa the mouth might be affected. Pemphigus often attacked the mouth or mucous membrane of the bronchial tubes, but Sir Malcolm Morris could not confirm the statement that pemphigus vulgaris might begin in the mouth. In pemphigus foliaceus, however, the mouth, or labia majora or minora might be the first parts attacked. Dermatitis herpetiformis was sometimes accompanied by lesions in the mouth or vagina, and the speaker had published a case in which lesions first occurred on the tongue (water-colour drawings illustrating these and other cases were shown). In epidermolysis bullosa bullæ might form on the mouth and lips, and in each of three children in a family observed by the speaker there were lesions in the mucous membrane of the mouth, whilst in one the intestinal tract was affected. He had recently seen a case of this disease with a well-developed bulla in the mouth, probably caused by eating toast, and he had also had a case in a patient, aged 60 years, which had been called pemphigus by the late Sir William Gull. Catarrhal herpes affected the lips, tongue, and genital organs; it was often the result of external irritation. Herpes zoster might attack the eyeball, and vesicles were occasionally seen on the tongue. Eczema might spread to mucous membranes. The red part of the lips might be involved in seborrhœic eczema and become covered with crusts. Lupus erythematosus inside the lips and cheeks often resembled leucoplakia or lichen planus. The conjunctivæ and larynx were occasionally affected, and Wilfred Warde held that rhinitis and lesions of other mucous membranes were often associated with lupus erythematosus. Lichen planus was not infrequently seen on the tongue and inside the mouth and often resembled leucoplakia. These lesions might precede the skin eruption, as in a case observed by Sir Malcolm Morris, in which such lesions occurred two years before the skin was affected. The disease occurred in the vulva in the form of milk-white patches on the inside of the labia. Wandering or geographical rash on the tongue was a harmless disease and had never been seen by the speaker in association with any disease of the skin. As regards psoriasis, Sir Malcolm Morris could not confirm Fordyce's experience that it might affect mucous membranes. In tinea circinata and in a few cases of sclerodermia the disease had been known to spread to mucous surfaces. Rhinoscleroma might also spread to the mucous membrane of the nose. Acanthosis was another rare disease in which the mucous membranes of the mouth and vagina might be attacked. Sir Malcolm Morris briefly referred to the treatment of affections of mucous membranes; it should be directed to the disease of which the mucous membrane lesions formed a part. Strong caustics should be avoided and a weak chromic acid solution (5 per cent.) was often beneficial.

The subject was discussed by Dr. LOUIS WICKHAM (Paris), Professor R. B. WILD (Manchester), Dr. J. GOODWIN TOMKINSON (Glasgow), Dr. J. H. SEQUEIRA (London), Dr. H. H. B. CUNNINGHAM (Belfast), Dr. S. E. DORE (London), and the PRESIDENT.

Sir MALCOLM MORRIS replied.

Dr. J. GOODWIN TOMKINSON read a paper on

The Etiology and Treatment of Pruritus Ani,

which was discussed by Dr. F. HOWARD HUMPHRIS (London), Dr. J. METCALFE (Bradford), and Dr. A. W. LOXTON (Birmingham).

Professor R. B. WILD read a paper, illustrated by photographs and microscopical sections, on a case of

Acanthosis Nigricans.

Mr. G. L. ST. GEORGE (Lisburn) and Dr. G. MONCRIEFF MELVILLE (Youghal) read a paper on another case of the same disease, with photographs and sections, the patient having been shown earlier in the meeting.

FRIDAY, JULY 30TH.

The proceedings were opened with a discussion on

The Supposed Risks attending the X Ray Treatment of Ringworm.

Mr. R. HIGHAM COOPER (London), introducing the question, divided his subject into two parts: (1) injuries to the scalp; and (2) injuries to the brain. He said that injuries to the scalp could not be called "supposed" risks, as most workers had, unfortunately, come across one or more instances, but these were now happily rare since Sabouraud introduced his admirable technique. He (the speaker) had met with four distinct varieties of scalp injuries: (1) Visible dermatitis unaccompanied by epilation; (2) visible dermatitis accompanied by epilation, but followed ultimately by regrowth of the hair; (3) visible dermatitis and permanent alopecia; and (4) permanent alopecia unaccompanied by visible dermatitis. The second and third were the varieties commonly found and were due to overdosage. The first was due to the use of too soft and the fourth to that of too hard a tube. It was very necessary to keep the vacuum of the tube within certain limits, and he suggested the following methods. A tube was used which was fitted with a mica disc regulator. The wire attached to this was pushed down until the end of it was three inches from the cathodal terminal. Suppose the tube to be very hard, some of the current would pass round through the auxiliary tube, and, although it might not lower the vacuum, yet none of the injurious penetrating rays were produced and treatment might be continued, the only disadvantage being the increased time it would take on account of the waste of current. The operator must guard against the vacuum becoming too low by stopping treatment, not when the tube became blue, but when it showed signs of reversals. Another method was to fix a piece of metal on an ampèremeter in the primary circuit in such a position that the needle when it indicated a certain ampèrage completed an electric bell-circuit (or, by inserting a relay, cut out the current to the primary of the coil). The use of this depended upon the fact that more current passed through the tube when it became soft, and *vice versâ*. A hot-wire ampèremeter must be used, as the oscillations in other types would spoil the experiment. Turning to supposed risk of injury to the brain, Mr. Cooper said that out of all the tens of thousands of cases treated during the past six or seven years not a solitary case of injury had been reported. He had carried out experiments on the lines of those recorded by Dr. J. M. H. Macleod in THE LANCET of May 15th last, and was pleased when he saw Dr. Macleod's paper to note that their results were identical. He would not describe his experiments on the effects of a single dose upon the cortex immediately beneath, beyond saying that the dose was about one-twentieth of a pastille. He had imagined that there was some part of the brain which (during a total epilation) would receive some rays from each exposure and be more affected than the brain immediately beneath the cranium in a single exposure. He had experimented with a cranium by a method which he described. He concluded that there was a spot at which a number of rays converged, but that at that spot the actual dose received was about one seventy-fifth of a pastille. The whole question of risk depended upon the least dose of X rays which could possibly cause harm. He had always regarded anything less than one pastille dose as *stimulant*, one pastille dose or a little more as *temporarily inhibitive*, and a greater dose than that as destructive. He concluded that in cases of ringworm, if the brain received a dose which could produce any effect at all, it could only be evanescent and of a stimulating nature. He concluded that there was no risk of injury to the brain, and, where Sabouraud's instructions were faithfully followed, very little risk of injury to the scalp, and further, that even this risk would disappear with improved apparatus, especially as regards regulation of the vacuum of the tube.

Dr. MARGARET DOBSON (Bradford) said that she had had three cases of dermatitis of the scalp; in all of them the megalosporon endothrix was present. She suggested that cases of ringworm in which this spore was found might be more prone to X ray dermatitis than others.

Professor WILD had found that private patients objected to the temporary alopecia caused by the X rays. He considered the treatment justifiable where a quick cure was urgent. He thought there was no proof that X rays killed the spores, and therefore parasiticidal remedies should be used after epilation to complete the cure. He had noticed several times that the hair when it grew again was coarser in texture and lacking in brightness, this being apparently due to partial atrophy. He agreed that there was no risk of injury to the brain.

Dr. J. H. SEQUEIRA said that he had treated 1400 cases by the pastille method. He considered risk of injury to the brain was purely imaginary. At the same time he preferred not to treat children under three years of age, where the fontanelles were not properly closed. 267 of his cases had come from institutions where they were under expert examination of both medical officers and school teachers. From these he had had a report that in no single instance was there, after several years' interval, the slightest evidence of any delayed development or other injury to the brain. Sabouraud, Fox, Adamson, and Macleod were unanimous in the same statement. Dr. Sequeira had himself experimented on similar lines with confirmatory results. As to methods of treatment, he gave smaller doses where the hair was fine in texture, considering it more responsive than coarse hair. He thought that for purposes of measurement the tachymeter was useless. He regarded the X ray treatment of ringworm as rapid, efficient, and safe, but made it a rule that in every case the child's parent gave a written guarantee that no legal proceedings would be taken should dermatitis or alopecia result.

Dr. R. W. MACKENNA (Liverpool) considered that the evidence given was sufficient for a verdict for the X rays of "not guilty" of causing injury to the brain, and his own experience would accord with such a verdict. At the same time, he agreed with Dr. Sequeira that X rays should not be used for too young a child; personally he only treated children above five years of age. As to alopecia without dermatitis, such a condition often occurred in cases of ringworm where no X ray treatment had been given. With regard to Dr. Dobson's remarks on endothrix, he thought the condition due to lessened vitality in the surrounding cells. He thought it very important that the genuine pastilles should always be used.

Dr. R. E. HOWELL (Middlesbrough) asked if it were a common experience for the hair to turn grey. This had happened in the first case he treated some years ago.

Dr. S. E. DORE considered that there was no risk to the brain. In confirmation of this opinion he instanced cases of extensive rodent ulcer which had been subjected to large doses over an extended period without the slightest apparent effect on the brain. He mentioned that epilepsy had been treated with X rays, but did not know with what results. If X ray treatment produced any effect at all upon the brain he should think it would be that of temporary stimulation. He agreed with Mr. Cooper that the drowsy and other effects occasionally met with for a day or so after treatment were due to the somewhat alarming apparatus of the so-called "spark specialist." He asked Mr. Cooper what was the area in the brain to which most of the rays converged.

Dr. SEQUEIRA then read a communication from Dr. A. HOWARD PIRIE (London), in which he described a case treated four years ago. Permanent alopecia had resulted, but there was no evidence of any ill-effects on the brain. Dr. Pirie believed in very careful regulation of the current used to ensure uniform dosage.

The PRESIDENT thought that in consideration of the weight of evidence from all quarters they might regard the spectre of brain trouble abolished.

Mr. COOPER, in reply, said that he thought germicidal agents should always be used in hospital cases, not, however, with the object mentioned by Professor Wild, but to prevent re-infection. In his experience that was the greatest trouble which had to be faced, and a germicidal application, such as a mercurial ointment, was necessary in the case of children living under conditions of dirt and squalor. While not maintaining that the X rays directly killed the spores, he found the disease cured by the use of X rays alone, where either the whole scalp was epilated at once, or (as in the case of most private patients) ordinary precautions were taken to prevent re-infection. He did not agree that the new hair was normally atrophic in character or grey in colour. His experience showed it to be slightly darker and stronger, and usually more curly. Deficiency in lustre and pigmentation were due to over-dosage, and that was the result aimed at in Noiré's treatment of hypertrichosis. Mr. Cooper mentioned a case of his own treated with a "super-pastille" dose through a filter, with the object of permanently removing the hair. He found that some hairs returned, but were dull, white, and brittle. Probably if he had slightly increased the dose none would have returned. Answering Dr. Dore, as far as he could make out the greatest number of rays converged to about the centre of the corpus callosum. He thought Dr. Sequeira's records of cases from institutions exceedingly valuable, as there was usually such difficulty in keeping in touch with patients years after treatment, though one usually heard if the case went wrong. In conclusion, he thought that after that morning's discussion they might quite relieve their minds of fears as to possible injury to the brain.

Dr. S. W. ALLWORTHY (Belfast) described a case of

Cutaneous Actinomycosis,

showing photographs before and after treatment. The disease apparently originated from chewing raw oatmeal. A tumour was removed and potassium iodide and X rays (30 exposures) were given with good results.

Professor WILD mentioned three cases. He believed in pushing the iodide very far as it was so quickly excreted, 80 per cent. being eliminated in three hours.

The PRESIDENT also described several cases.

Dr. F. HOWARD HUMPHRIS (London) read a paper on

Some Practical Uses of Static Electricity.

He advocated the use of static currents for the relief of pain, particularly in overcoming areas of congestion; instancing sciatica, he said that the pain was relieved by inducing rhythmical tissue contraction or "cellular protoplasmic massage" under which stasis cannot exist. A single administration was gratifying, but treatment should be continued once or twice daily for a week and then gradually discontinued. Where sparking was not well-borne the brush should be given.

Dr. MUNRO (New York) agreed as to the value of static currents in the relief of stasis; their use was particularly indicated in acute lumbago and prostatitis.

Dr. J. METCALFE (Bradford) considered high-frequency currents generally more beneficial, but not in nerve cases. He instanced a very bad case of costal neuritis which had been cured by static electricity. He had found these currents useful in Bell's and post-diphtheritic paralyses.

In reply, Dr. HUMPHRIS thought that failures in the use of static currents were generally due to lack of knowledge or of a sufficiently powerful machine.

Dr. E. B. HAZLETON (Sheffield) in a short paper on

X Rays in Gynæcology,

advocated their use where it was advisable to render a woman sterile and for the reduction of fibroids and of offensive discharges.

Mr. COOPER, while agreeing that men and small female animals were sterilised by exposure to X rays, thought that the ovaries in an adult woman were too well protected for X rays to cause permanent sterility without seriously affecting the superficial structures.

Dr. SEQUEIRA then read a paper on

Idiosyncrasy and X ray Treatment,

communicated by Mr. J. HALL-EDWARDS (Birmingham) who was unfortunately too unwell to be present. In the author's opinion old cases of "burning," which were put down to idiosyncrasy, were really the result of faulty exposure. He quoted the opinions of most X ray workers who were, almost without exception, of the opinion that idiosyncrasy did not exist. Personally he thought it did exist, but to a very slight extent, and not enough to be dangerous. He mentioned that in many cases pigmentation was due to an idiosyncrasy and not necessarily in proportion to the dose of X rays.

Dr. HUMPHRIS thought that many of these so-called cases of idiosyncrasy were due to varying amounts of reverse current passing through the tube, and suggested that they

might not occur if the tube was excited by a static machine, the current from which was unidirectional.

Mr. COOPER said that all Sabouraud's work was done with static machines. Pigmentation was frequently due to a drug which the patient was taking, and he mentioned cases of deep pigmentation when the patient was given arsenic (as in leukæmia).

Dr. SEQUEIRA confirmed Mr. Cooper's observation on arsenic and described the case of a student at the London Hospital who received a dose of X rays and subsequently took some arsenic, with the result that several days later deeply pigmented spots appeared.

The work of the section closed with a vote of thanks to the President.

HÆMATOLOGY AND VACCINE THERAPY.

THURSDAY, JULY 29TH.

President, Sir ALMROTH WRIGHT (London).

Professor CALMETTE (Lille) opened a discussion upon the

Early Diagnosis of Tuberculosis for the Effective Treatment of that Disease.

He stated that his own researches in conjunction with those of Bartel, Orth, and Rabinovitch had established (1) that tuberculosis remains localised for a longer or shorter period in the lymphatic glands in connexion with the organ first infected; (2) that the rapidity and intensity of the infection depend on the virulence of the infecting organism; (3) that when the bacilli are neither numerous nor virulent then they may be destroyed in these glands, or the infection may be arrested by calcification of the glands; and (4) that serious tuberculous lesions result either from a single infection in bulk or from numerous infections frequently repeated at short intervals. This last reason would account for the spread of the disease in cattle in infected sheds and in men in infected houses. Professor Calmette laid stress on the importance of diagnosing the infection before it had advanced far enough to give definite physical signs. He condemned the subcutaneous injection of tuberculin for the following reasons: (1) there is a general febrile reaction accompanied by local congestion with possibly a dangerous diffusion of bacilli; (2) it is not practicable in febrile patients; and (3) cases of aggravation of the disease might, rightly or wrongly, be attributed to the injection of tuberculin. The local reactions were preferable, and of these the cutireaction of von Pirquet had the disadvantage that it gave positive results in healed cases as well as those in which the disease was active, so that 55 per cent. of all adults gave positive results. In children under three years of age, however, only 4 per cent. of apparently healthy children gave the reaction, so that in children under this age it was of value in diagnosis. The ophthalmo-reaction had the advantage of only showing tuberculous lesions actually in evolution. It also showed to some extent the degree of the infection, the reactions in the more recent cases being clearer and more intense. He had found that those cases which showed the greatest reaction had also showed the presence of the largest quantity of antibodies when tested *in vitro* with tuberculin by the Bordet-Gengou reaction. In some extensive and virulent infections the ophthalmo-reaction was either delayed or failed to appear. Only 18 per cent. of apparently healthy persons gave positive results, while of the tuberculous patients 92 per cent. reacted, these figures being taken from an analysis of 20,000 cases. He did not think that the test was of any value in prognosis, for he found that the amount of antibodies to the tuberculin was in no way relative to the gravity of the disease. The test was not dangerous, but precautions must be taken to see that the eye was healthy and that the tuberculin was aseptic and pure. With these precautions he had only had 80 cases out of his 20,000 (or 0·4 per cent.) in which the reaction had been very severe, so that there was less danger in the procedure than in the exposure to X rays or the puncture of a vein. He maintained that there was no hypersusceptibility induced by one instillation, so that if the test were repeated after one failure and a positive reaction were obtained it was good evidence of tuberculous infection. Professor Calmette summed up the methods of early diagnosis of tuberculosis thus: 1. By reactions called "revivis-cent," which consist in making a conjunctival or other local reaction appear in patients who are carriers of tuberculous lesions or by the injection of tuberculin subcutaneously. 2. By study of the humoral or phagocytic reactions—(*a*) activation of cobra venom by serum or milk of tuberculous subjects; (*b*) deviation of the complement with tuberculin or extract of tubercle bacilli; and (*c*) opsonic index by Wright's method. He considered that by applying these methods periodically in communities such as schools it would be possible to isolate the carriers of bacilli, by which means the chief cause of the aggravation of the disease would be prevented and the patients could then be put in the way of a cure and possibly of an antituberculous immunity.

Professor W. ST. CLAIR SYMMERS (Belfast) said that one of the great features about such meetings was that it enabled them to come in contact with those men with whose writings and works they were familiar. The ophthalmo-reaction for which they were indebted to Professor Calmette had, he thought, fallen rather into disuse in this country owing to certain dangers which had been met with. However, he had no doubt that when the practitioners appreciated the results which had been put before them it would be restored to favour.

Professor E. J. MCWEENEY (Dublin) said that he had tested some cases both by Calmette's and von Pirquet's methods and his results agreed with those of Professor Calmette.

Dr. THOMAS HOUSTON (Belfast) said that he had found the ophthalmo-reaction too sensitive and there was a possibility of making a diagnosis of tubercle on it when really the lesion was of a different nature although the patient might have some slight tuberculous infection. He preferred to use the opsonic method of diagnosis. He mentioned several cases in which there was a definite ophthalmo-reaction, but which the subsequent history showed to have been cases of typhoid fever, although possibly a latent tuberculous focus was present.

Dr. W. H. WILLCOX (London) said that he had found the ophthalmo-reaction very reliable, but in several cases there had been severe conjunctivitis. He preferred the opsonic test, especially when a series of three or four indices were done before and after some massage or exercise.

Dr. A. C. INMAN (London) said that he had tested the opsonic indices of a number of patients who had had Calmette's test done and had found that it acted as an inoculation of tuberculin, and in some cases a considerable negative phase was induced.

Professor WILLIAM OSLER (Oxford) emphasised the fact that a considerable number of the people present in the room would give positive reactions by Calmette's test, although they were in no sense dangerous to the community. He distinguished between open and closed cases of tubercle, the former being a source of infection, but the latter being quite safe, and therefore not to be cut off from free intercourse with the community.

Dr. INMAN next read a paper on

The Value of the Opsonic Index in the Diagnosis and in the Regulation of Treatment of Tuberculosis.

He maintained that the study of the opsonic index, and more especially the study of the phenomena of auto-inoculation, had given them a very much clearer conception of such a complicated disease as pulmonary tuberculosis. Owing to the limited time at his disposal he touched on only four ways in which the opsonic index was of assistance in the study of the disease. I. The early diagnosis of tuberculosis. The best method of applying the index for diagnosis was to examine the blood of the patient before and after some disturbance of the focus, by walking or breathing exercises in the case of pulmonary affections, or by massage or the application of a Bier's bandage in the case of localised approachable foci of disease. If fever were present and the patient confined to bed the blood should be examined in relation to the swing of the temperature and an inverse relationship of opsonic curve to temperature would suggest a tuberculous infection. The great advantage of this method of diagnosis over the old tuberculin test, the ophthalmo-reaction, or the cutaneous reaction, was that no tuberculin was introduced into the body. Latent or arrested tuberculosis frequently gave a positive ophthalmo- or cutaneous reaction, whilst the opsonic index only varied if "auto-tuberculin" coming from the diseased focus was affecting the blood. Under the latter circumstance evidence was afforded that the patient required immediate treatment. II. By blood examinations Dr. Inman had been able to distinguish between the following groups of tuberculosis. 1. Cases in which

the blood was varying from hour to hour, the patient being kept at rest (spontaneous auto-inoculations occurring). These cases were febrile. 2. Cases in which the opsonic index did not vary so long as the patient was kept at rest, but varied as the result of exercise (auto-inoculations inducible by exercise). Such auto-inoculations might be excessive and were then dangerous, but if not excessive they were harmless or even advantageous. 3. Cases in which the opsonic index did not vary even after the hardest labour. The disease was here probably arrested. III. The opsonic index indicated the rational treatment of tuberculosis so far as they could go to-day. 1. It had shown the importance of absolute rest in the active stages of the disease. 2. It had explained the effect of graduated labour employed as a therapeutic agent in the treatment of phthisis and the action of Bier's passive congestion method for surgical tuberculosis. 3. It had given a satisfactory means of controlling tuberculin inoculations, as well as of selecting suitable cases for the treatment. IV. The opsonic index afforded a valuable guide as to whether the disease was arrested or not. If restoration to previous good health were accompanied by a normal index before and after active or passive movement of the focus of infection, this might be taken as evidence of the arrest of the disease.

Dr. A. BUTLER HARRIS (London) said he was glad that the time had arrived when the profession recognised that the opsonic index was no mere phantasy of Sir Almroth Wright. He himself had found the index of great use both in the diagnosis and in the treatment of tuberculosis. He did not think, however, that although after treatment a patient showed a persistently normal index for a considerable time he was necessarily cured, and related a case to bear out this point.

Mr. S. MAYNARD SMITH (London) read a paper on

The Inoculation Treatment of Tuberculous Arthritis.

He described the results of an investigation which he had carried out from the point of view of a surgeon into cases that had been treated in the inoculation department of St. Mary's Hospital, London, during the past few years. These cases were 72 in number, and of these 34 attended for examination in response to communications. (Printed particulars of these cases were handed to the meeting.) It was shown that, of the 34 cases, only five were treated by inoculation from the time that they first came under observation. Four made such complete recoveries that it could not be determined which had been the diseased limb; the fifth was cured, some deformity and limitation of movement remaining. In 12 cases splinting, rest, or operation, had been carried out for 12 months or less before inoculation. In 11 of these a cure ensued, in seven with complete restoration of function; the twelfth case had improved and was still under treatment. Of the remaining cases two had had only two months' treatment; in two more no improvement had taken place after six and ten months' treatment respectively; nine were cured, with more or less complete restoration of function; and four had improved and remained under treatment. To turn to another point of view, eight had had sinuses, and in every one of these the sinus had healed except in the case of a man who ceased to attend after six months. In one case the sinuses broke down again after two years, but were now rapidly closing again with recommencement of tuberculin treatment. The question of the use of the opsonic index in diagnosis and in deciding when cure was complete was also dealt with, and, lastly, the ways in which surgical treatment should be combined with vaccine therapy.

Dr. D. W. CARMALT-JONES (London) continued the discussion with a paper on

A Review of the Inoculation Treatment of Tuberculosis.

The paper was a critical review of the cases of tuberculosis treated in the department of therapeutic inoculation at St. Mary's Hospital during the last five years under Sir Almroth Wright. The sites of infection, such as glands or skin, were considered separately, and note was taken of circumstances, such as dose, age, or secondary infections, which might influence results. The object was to enable the prospects of success in any given case to be estimated—that is, it was an attempt to establish prognosis. The patients all attended as out-patients, the records had the usual out-patient imperfections, and it should be noted that the patients had had no advantages except inoculation. The numbers of each kind of case treated were as follows: lymphatic glands, 87; ulcer, sinus, and abscess, 50; genito-urinary tract, 34; lupus, 23; lungs and pleura, 10; bone, 8; dactylitis, 7; peritonitis, 5; eye, 3; and larynx, 2. Tuberculous lymphatic glands, the most numerous class, were studied in greater detail. In all the cases the patients had been personally interviewed. The estimates of results in other sites were made from the records only. Lymphatic glands, 87 cases:—In eight inoculation was only an adjunct to removal by operation; no recurrences were recorded. In 79 cases inoculation was the chief method employed; the patients were inoculated subcutaneously with tuberculin (bacillary emulsion) at intervals of ten days; the doses were minimal at the outset, and were not increased till they ceased to have a therapeutic effect. Free fluid was drawn off by a syringe, and sources of irritation, such as carious teeth, received local treatment. Secondary infections were treated with appropriate vaccines. When glands had disappeared altogether, or had been reduced to the size of cherry-stones, they were considered "cured"; when they remained as large as raisins they were called "much better"; when slightly reduced they were called "better," and others were described as "unchanged" or "worse." 27 cases were cured, 22 much better, 18 better, 8 unchanged, and 4 worse. Age was the most important factor in prognosis; the greatest proportion of good results occurred in young children and in young adults from 15 to 25 years of age; the lowest proportion of good results and the highest of bad occurred at about the age of puberty. The minimal dose was 1/20,000th milligramme for children and 1/15,000th for adults, and the maximal was 1/10,000th and 1/4,000th milligramme respectively. Relapse, after attaining to some degree of improvement, had occurred in 11 cases. Ulcer, &c., 50 cases:—10 cured, 20 much better, 9 better, 8 unchanged, 3 unknown. The dose was 1/15,000th to 1/7,000th milligramme for children and 1/15,000th to 1/5,000th milligramme for adults. As before, the best results were obtained in young children and young adults, and the worst in children from 10 to 15 years of age. Secondary infections occurred in more than half the cases. Treatment lasted on the average about a year. Relapse occurred six times. Genito-urinary tract, 34 cases (testis 9, kidney 8, bladder 17):—7 cured, 8 much better, 13 better, 3 no better or worse, 3 unknown; 5 relapses occurred. The dose was 1/25,000th to 1/4,000th milligramme, a small initial dose being important. Treatment generally lasted a year. Secondary infections occurred in half the cases. Lupus, 23 cases:—3 cured, 8 much better, 9 better, 1 unchanged, 2 unknown; there were 5 relapses. Dose, 1/10,000th to 1/2,000th milligramme. Treatment had lasted two years. Secondary infections were common. Phthisis, 10 cases:—4 much better. The following were also much better: bone 5, dactylitis 2, peritonitis 1, and eye 3. General prognosis:—Glands 1 in 3 cured, 5 in 8 much improved. Ulcer 1 in 5 cured, 3 in 5 much improved. Genito-urinary tract, 1 in 5 cured, 3 in 7 much better. Lupus, 1 in 8 cured, 1 in 2 much better. It was submitted that such results obtained among out-patients proved the very high value of inoculation in the treatment of tuberculosis.

Dr. MARCUS S. PATERSON (Frimley) read a paper on

Auto-inoculation in Pulmonary Tuberculosis.

He explained that he used the word "auto-inoculation" to mean the effect of exercise on the blood as shown by the clinical signs. At first when he had prescribed graduated labour for his patients at the Brompton Sanatorium, he did it rather with the view of avoiding the lazy habits so frequently acquired at sanatoriums, but he soon noticed that many patients who did not improve on lighter work obtained marked benefit when put on more laborious tasks. This led him, in conjunction with Dr. Inman, to regard the whole process as one of auto-inoculation, which supposition was borne out by the serum tests carried out by Dr. Inman. This theory, Dr. Paterson said, had brought him from working in the dark to working with open eyes and had fixed a point at which to aim to find out how much useful work a patient could do without rise of temperature and with decrease of sputum. It had also enabled him materially to shorten the stay of the patient in the sanatorium, so that he was now able to treat 50 per cent. more patients at Frimley without the addition of a single bed. Dr. Paterson laid especial emphasis on the means at disposal for controlling excessive auto-inoculation. Such a condition was constantly occurring in febrile patients, so that in such cases the first thing to do was to keep the patients at *absolute* rest. At first, before he

understood the process of auto-inoculation he had been in the habit of allowing some such patients to sit up in bed and wash themselves, but more recently he had found that even this should not be allowed and the rest should be absolute. Cough should be carefully controlled, as a patient who coughed violently shook the whole bed and was, as regards foot pounds of work, taking fairly vigorous exercise. The indication of excessive auto-inoculation in the graduated labour patients was a temperature of 99° F., *plus a headache*, and such cases were treated with absolute rest and after about a week they were, as a rule, able to return to work. Dr. Paterson showed charts illustrating the effect on the temperature of excessive auto-inoculations and of the various grades of labour from absolute rest to navvy work. He summarised modern sanatorium treatment as follows:—1. Placing patients under ideal hygienic conditions and keeping them at rest. 2. The same *plus* tuberculin inoculations. 3. Prevention of excessive auto-inoculation. 4. Inducing auto-inoculation by graduated exercise or work.

FRIDAY, JULY 30TH.

Professor BORDET (Brussels) opened a discussion on

The Infections of the Respiratory Tract

with a paper on the Micro-organism of Whooping-cough. He stated that the researches undertaken with Dr. Gengou in 1906 had caused him to regard as the cause of whooping-cough a small cocco-bacillus, non-motile, negative to Gram, and staining feebly with methylene and toluidene blue. This, he said, is found in very great quantity, often in pure culture, in the exudate, rich in leucocytes, coming from the depths of the bronchi, which young patients expel in the characteristic paroxsyms of cough. The first cultures are difficult to obtain because the organism after leaving the body develops rather slowly, the colonies not being readily seen till the third day, and very special media being required for their cultivation. The best medium is agar with which has been mixed a large proportion of blood drawn off aseptically. Isolation is by no means easy unless the exudate contains, besides the specific organism, only a very few contaminating microbes, the commonest of which are the pneumococcus, streptococcus, or the influenza bacillus. The organism of whooping-cough bears a certain morphological analogy to the influenza bacillus, but it is readily distinguished by its cultural characteristics and by the reaction of immune sera. Professor Bordet's organism grows readily in liquid media containing blood or serum if such medium is spread in a thin layer freely exposed to the air. If the cultures are filtered the filtrate does not appear to possess any very evident toxic properties. But by taking the bodies of organisms grown on solid media a poison can be prepared, by employing the method devised by Besredka for obtaining endotoxins, which is very active and produces the essential symptoms of whooping-cough. The poison has a marked power of necrosis. Injected in minimal doses into the subcutaneous tissue of the guinea-pig it causes extensive necrosis of the skin, which turns black and sloughs quickly over large areas. Intraperitoneal or intravenous injection is rapidly fatal; the results are the more remarkable since the toxic extracts employed contain only very small amounts of bacterial substance. Further, this suggests that in whooping-cough the long duration of the period of cough is due to necrosis of the cellular lining of the bronchi, and this is supported by the findings of some histologists. The serum of patients who have recovered from the disease shows specific reactions to the organism. Thus, the fixation of the complement which was devised by Bordet and Gengou in 1901, and which has since been applied to many diseases, notably syphilis, is readily demonstrable. This, in addition to the bacteriological findings, furnishes very strong proof that the organism is the real pathogenic agent in whooping-cough.

Dr. J. FREEMAN (London) continued the discussion by narrating his experiences with Professor Bordet's whooping-cough organism. He emphasised the difficulty in recognising and isolating the bacillus in the sputum by reason of its slow growth and its resemblance to the influenza bacillus. He was convinced that the organism was the etiological factor in whooping-cough as the serum of patients suffering from this disease agglutinates the bacillus sometimes in as much as a 64-fold dilution. The complement deviation method of Bordet-Gengou also gave confirmatory evidence. The fact also that Dr. Bordet had inoculated some children with a vaccine of the organism and had produced a very severe negative phase he also considered as being strong evidence of its etiological significance. He had tried opsonic estimations, but owing to the difficulties met with in staining the organism he had met with no success in this direction. He had performed over 1000 inoculations on children suffering from whooping-cough, the inoculations being alternately of vaccine of the bacillus and of normal salt solution. Owing to the lack of quantitative blood tests he had found it very difficult to graduate his dosage properly, but with doses varying from 2,500.000 to 20,000,000 he had found that there was a distinct advantage in the cases inoculated with vaccine over those inoculated with salt solution, the difference being most marked where the large doses were used. He thought that when the question of dosage had been worked out properly the vaccine would prove very valuable in the treatment of whooping-cough.

Dr. W. H. WILLCOX (London) and Dr. W. PARRY MORGAN (London) communicated a paper on

The Treatment of Pneumonia by Inoculation.

The paper was based on the treatment by inoculation of 24 cases of acute pneumonia, most of these cases being patients of St. Mary's Hospital, London, under the care of Dr. Willcox. It was emphasised that vaccine treatment was a valuable therapeutic measure, but that it was not intended that it should replace other forms of treatment which should include the usual approved therapeutic measures. The authors did not consider it wise to give any statistics as to the mortality rate of cases treated by vaccine because, although their results had been extremely good, the number of cases was too small for any definite conclusions to be drawn. Three methods of procedure in the preparation of an autogenous vaccine were described, cultures being made (1) from sputum; (2) from blood; and (3) by aspiration of the pleural cavity or superficial part of the consolidated lung by a small syringe with a fine needle. The choice of the particular method was discussed. As regards treatment it had been found advisable to commence by the administration of 20,000,000 to 50,000.000 of stock pneumococci immediately the patient came under treatment. At the same time steps were taken to prepare an autogenous vaccine. After 24 to 48 hours a second dose might be given, and further doses if necessary. It was considered important that as the crisis neared the dose should be decreased, since the patient became more susceptible to inoculation at this period. The details of the 24 cases investigated and the clinical effects produced in them by vaccine were described. It was found in many instances that there was an immediate fall of temperature, and the dyspnœa and delirium became less. The duration of the disease appeared in some cases to have been shortened, the crisis occurring in six cases before the usual time. Sometimes the fall of temperature was by lysis instead of by crisis; this happened in eight of the cases, a larger proportion than would have been likely without vaccine treatment. The most convincing evidence of the benefit derived from vaccine was shown by those cases which ran a protracted course. In these cases after inoculation almost immediately the temperature fell and the symptoms rapidly cleared up. This improvement could have been due to no other cause than the vaccine, since before this was given all the usual methods of treatment had been adopted without avail. In some cases an autogenous vaccine was found to give decidedly better results than a stock pneumococcus vaccine. The authors emphasised the importance of commencing vaccine treatment as early as possible in the course of the disease.

Dr. A. BUTLER HARRIS (London) said that he had been using vaccines for pneumonia for the last two years with very beneficial results. He had seen a crisis on the first day of the disease 11 hours after inoculation. He thought a stock vaccine made from a virulent strain of pneumococcus was quite efficient.

Dr. MORGAN, in reply, said that he had found differences in the serum reactions of pneumococci of various origins and had even seen one obtained by lung puncture agglutinated by the patient's serum, although a strain isolated from the throat of the same patient was not so agglutinated. In his experience stock vaccines failed entirely in some cases.

Dr. C. H. BENHAM (Hove) read a paper on

The Bacteriology and Vaccine Therapy of the Common Cold.

He suggested that during seasonal epidemics of catarrh a considerable number of the ordinary saprophytes of the

upper air passages probably became pathogenic. The organisms he had found in the nose were: (1) micrococcus catarrhalis; (2) micrococcus paratetragenus; (3) bacillus septus; and (4) bacillus of Friedländer, and more rarely the pneumococcus and influenza bacillus. He thought the first four were the usual infective agents of the common cold. The micrococcus catarrhalis caused both acute and chronic colds with very irritable cough, some coryza, and pyrexia. The micrococcus paratetragenus (Bezancon and de Jong) was often associated with it and caused similar symptoms. The bacillus septus (Cautley) was seldom a cause of coryza, but it produced mild pharyngitis, with painful throat, nervous depression, and muscular pains. It was a diphtheroid bacillus with cultural reactions differing somewhat from bacillus diphtheriæ and bacillus Hoffmanni. Charts were shown of three cases of acute cold, one of "influenza," and one of chronic cold. In all of these the administration of micrococcus catarrhalis vaccine was followed by a rise in the opsonic index and a marked improvement in the clinical symptoms. Dr. Benham concluded from his work that vaccine therapy was the most efficient way of treating such diseases.

Dr. FREEMAN thought that the pneumococcus and streptococcus ought to be assigned a more important rôle in the production of such diseases, as he had found them of very frequent occurrence.

Dr. BUTLER HARRIS said he had found that the micrococcus catarrhalis, the pneumococcus, and the bacillus septus were the most frequent inhabitants of the nose. He did not think the clinical condition was any indication of the bacteriology. He instanced several cases of acute "sore throat" which were caused by micrococcus catarrhalis and which cleared up within 12 hours of the administration of one dose of vaccine.

The PRESIDENT offered himself as an example of the influence of vaccines on chronic infections of the respiratory tract. Although he had suffered from chronic bronchitis for 30 years, after a few doses of his own pneumococcus the condition entirely cleared. He laid stress on the importance of the influenza bacillus in many of these conditions.

Dr. D. W. CARMALT-JONES (London) followed with a paper on

The Treatment of Bronchial Asthma by a Vaccine.

He suggested that the spasmodic dyspnœa which was such a distressing symptom in many cases of chronic bronchitis was due to a specific bacterial toxin, the result of a definite infection, and was amenable to treatment by a corresponding vaccine. He isolated from a case of bronchitis with spasmodic dyspnœa a short Gram-negative bacillus with rounded ends, non-motile, growing readily on ordinary media, and not fermenting any of the common sugars. The patient after three doses of from 20,000,000 to 30,000,000 of a vaccine prepared from this bacillus lost all her dyspnœa. There was a slight recurrence three months later which disappeared with a renewed administration of vaccine. The speaker had used the same vaccine in over 50 similar cases since, but the results were difficult to gauge, as the degrees of disability at the outset were very variable. The condition was markedly intermittent and the symptoms were largely subjective, so that results depended on the patients' statements. In some cases the results of treatment were remarkable, and out of 52 cases treated 13 lost all their symptoms, only four completely failed, the remainder receiving varying degrees of benefit either in the frequency or severity of the attacks. Attempts at serum diagnosis had failed, but the fact that the vaccine had been so effective was, in Dr. Carmalt-Jones's opinion, strong presumptive evidence that the dyspnœic attacks were due to a specific organism.

The proceedings of the section were closed with a paper by Dr. ALEXANDER FLEMING (London) on

The Bacteriology and Vaccine Therapy of Acne Vulgaris.

The author emphasised the importance of the acne bacillus in the etiology of this condition, a subject which he had elsewhere discussed at some length.[1] The medium which he had found best for the growth of the bacillus was ordinary nutrient agar to which had been added 1 to 5 per cent. of oleic acid, but even on this it was necessary to plant out the pus very thickly to obtain a growth. In the treatment of acne he had obtained exceedingly good results with a vaccine of the bacillus, either alone or in combination with staphylococcus vaccine in those cases where there was a mixed infection.

[1] THE LANCET, April 10th, 1909, p. 1035.

LARYNGOLOGY, OTOLOGY, AND RHINOLOGY.

WEDNESDAY, JULY 28TH.

President, Dr. STCLAIR THOMSON (London).

The PRESIDENT expressed his pleasure at the honour which the Council had conferred upon him by electing him as President. He regretted the untimely death of Dr. Robert Allen, who had so well aided him in drawing up their programme, which had been carefully considered, and had been arranged with special reference to questions affecting the profession generally. In tinnitus they had a trouble that was widespread, and in the discussion upon diphtheria they would have the advantage of an expert clinician, a skilled bacteriologist, and an able guide in state medicine; while in the treatment of laryngeal stenosis they were to have the pleasure of hearing a prominent British surgeon, together with an eminent American authority; and they would also hear the views of a laryngological expert from Brussels. After a few remarks upon the pronunciation of the word tinnitus the President introduced

Dr. THOMAS BARR (Glasgow), who then read a paper on

The Treatment of Tinnitus Aurium from a Non-operative Standpoint.

Dr. Barr referred to the difficulty in finding its cause, which might be in the conducting or receptive apparatus, and which might be simple as in cerumen, or complicated as when due to oto-sclerosis, to intralabyrinthine or to intracranial involvement, or to some general affection, as kidney or heart disease, diabetes or gout, in all of which treatment appropriate to the case should be given; for example, neurasthenia might be either cause or effect, but in either case prolonged rest, tonics, and change of air were indicated. He believed that oto-sclerosis, which was often associated with anæmia, required general rather than local treatment. Digitalis was useful in the pulsating form, whereas alcohol generally aggravated it. Bromides, hypnotics, and sedatives were referred to and the indications for their use mentioned. The action of fibrolysin in the absorption of fibrous adhesions was touched upon. The sometimes doubtful results of quinine and salicylates were pointed out, and the indications for, and objections to, their use discussed. Bromides were probably useful at bedtime and sometimes gave great relief. Paraldehyde also was at times beneficial. Potassium iodide was useful in the forms associated with vertigo even with no evidences of a specific diathesis. He thought that pilocarpine was indicated in those cases showing Ménière's symptoms. With reference to climatic conditions, he thought that bracing inland and upland air was good, without, however, over-exercise of the body. He considered that external applications of stimulating remedies, such as cantharides or liniment of mustard, to the mastoid process occasionally mitigated the noises. He dealt with massage of the tympanum with a vibratory frequency of from a few hundred to 2000 a minute, which he had found sometimes of benefit; but he laid stress particularly upon the good results obtained by the application of a tuning-fork to the affected ear, the pitch of the note of the fork being of an opposite character to that of the subjective noise (*tonbehandlung*). Electrical treatment he thought of little value and might be actually injurious. It was important to establish natural breathing and to see that the naso-pharyngeal space was healthy. It should be remembered that tinnitus was occasionally due to dental decay.

Mr. R. LAKE (London), who followed, divided treatment into operative procedures remote from the ear and auditory apparatus and those dealing with any part of the auditory tract. Amongst the former were intranasal operations, lumbar puncture, and ligature of the carotid. The useful intranasal procedures for reflex tinnitus were removal of the posterior ends of the inferior turbinates and of spurs of the septum, which extended to the outer nasal wall. These conditions, though rare, required treatment if tinnitus were present with good hearing. Obstruction or irritation of the pharyngeal end of the Eustachian tube might require treatment. He gave Babinski's results of lumbar puncture, which showed 33 per cent. relieved, and thought these were rather

due to an indirect effect upon blood pressure, as the endo- and peri-lymph spaces of the labyrinth were not in direct communication with the sub-arachnoid space; and he found that the tinnitus resulting from arterio-sclerosis was often modified or removed by remedies which lowered arterial tension. He referred to the early days when the tympanic membrane was trephined and other minor operations were performed which time and experience had modified or left behind. He considered that better measures were now adopted than division of the tensor tympani or even than section of the posterior fold. Of all these procedures he would prefer multi-section of the posterior fold. He did not think much of removal of one or more ossicles, but such might perhaps be tried before a major operation which destroyed the hearing altogether, if there were some hearing power to be preserved. He next dealt with the removal of the stapes, which operation was associated with the name of Jack. The results, however, were not quite what were hoped for. He reviewed methods of opening the labyrinth and of trephining the cochlea, which he thought better done with a radical mastoid operation to enable a better view to be obtained and which did not necessarily destroy the hearing. Ligature of the carotid he thought indefensible. He concluded his remarks with a description of what he considered the logical operation—i.e., ablation of the cochlea after a preliminary radical mastoid operation—giving descriptive cases. He strongly objected to division of the auditory nerve, which was very dangerous and had a high death-rate.

Dr. J. A. KNOWLES RENSHAW (Manchester) thought that tinnitus was far most frequently due to chronic middle-ear non-suppurative catarrh, or to the suppurative form, and in both cases he believed that this symptom became more and more severe. Its treatment had firstly to deal with all the accessory passages, as of the nose and Eustachian tube. It had been suggested that tinnitus was due to increased tension in the labyrinth caused by the indrawing of the foot-plate of the stapes, or to some obstruction of the lymph circulation by some contracting interstitial tissue, and he had therefore tried hypodermic injection of thiosiamine. He had used a 5 per cent. aqueous solution twice a week, increasing the dose from six to 35 minims. Latterly he had used an aqueous solution of 10 per cent. thiosiamine and 20 per cent. of glycerine in the same manner, and he had also tried fibrolysin. There had been a marked improvement in every case, but it was too soon to claim any permanency; still, he thought that it should be tried before operating upon the middle-ear or labyrinth for this trouble. In reply to a question by the PRESIDENT, Mr. RENSHAW stated that he had treated about 20 cases of chronic middle-ear disease, 12 of which were suppurating, and that all were relieved during the injections.

Dr. ANDREW WYLIE (London) considered that an attempt should be made to relieve tinnitus even though it could not be cured, and he had found that from one-twentieth to one-twelfth of a grain of calomel given every second night was of service. He had also tried passing hot air into the tympanum through the Eustachian catheter, and found it useful. The air was heated by an electric lamp and driven through the catheter by means of a foot pump—a contrivance of his own which he demonstrated.

Dr. G. W. HILL (London) considered that the surgical treatment had been fairly summed up by Mr. Lake. He himself had never opened the labyrinth for tinnitus because in two of his cases the cochlea had been exfoliated, and yet the tinnitus had remained. Of course, the tinnitus might be central, and then the absence of the cochlea would not improve matters, and division of the auditory nerve was useless as it really extended to the centre for auditory impressions.

Dr. J. WARD COUSINS (Southsea) thought that the character of the various sounds was not of diagnostic significance, and he did not believe that spasm of the tensor tympani had much to do with tinnitus beyond, perhaps, keeping up the tension of the membrane. He thought that syphilis was a frequent cause. He referred to the great nervous depression sometimes resulting and gave an instance in which it had led to self-destruction. With reference to treatment he used injections of chloroform and air alternately. He had removed the ossicles but had had no good results, but as surgical treatment had now so much advanced there was hope on these lines in the future. He considered that there was great danger of facial paralysis in division of the auditory nerve.

Dr. R. H. WOODS (Dublin) laid great stress upon the fact that it was mere assumption to speak of a permanent increase of tension in the labyrinth caused by pressure inwards of the foot-plate of the stapes. This idea was based upon an experiment by Politzer, which he could not agree with. It could only occur for a short space of time because of the free communications of the labyrinth with the parts around.

Dr. A. LOGAN TURNER (Edinburgh) thought that it had not been proved that fibrolysin injected into the blood had any selective action upon fibrous tissue in the middle-ear, and that the good results mentioned by Dr. Renshaw might have been secondary to its action elsewhere in the body, as, for example, in cases of chronic gastric ulcer. Its introduction into the tympanum might possibly have a beneficial result.

Dr. BRYSON DELAVAN (New York) thought that the question was one of the greatest importance and congratulated the Association upon its choice of this subject for discussion.

A telegram of apology for non-attendance was here announced from Dr. H. Smurthwaite, a Vice-President.

The PRESIDENT stated that he had only recently written to Dr. Lermoyez's assistant about the hot-air treatment for nasal catarrh, and that he had received a reply that it was not thought so much of as formerly, and that it was considered that the results of its use were due rather to suggestion.

Dr. BARR replied, and thought that operation on the labyrinth generally gave more relief to the vertigo than to the tinnitus. It was interesting to hear Dr. Turner's suggestion *re* the indirect action of fibrolysin.

Mr. LAKE, in his reply, emphasised the importance of Dr. Woods's objection to the assumption of any permanent increase in intra-labyrinth pressure. With reference to ablation of the cochlea, the modiolus must be removed, for the bony cochlea might, as in Dr. Hill's case, be exfoliated and yet leave some nervous elements behind.

Dr. HUGH E. JONES (Liverpool) read a paper on

Preliminary Observations on the Association of Slight Abnormalities of the Auricle with Certain Forms of Deafness,

in which he referred to the smallness or absence of the lobule and other slight defects which had been considered to be associated with certain vicious or criminal tendencies. He thought that these defects were generally associated with disease which was not the result of acute inflammation, but rather was the result of imperfect development of the palate, the naso-pharynx, the Eustachian tube, or the tympanum, and he considered the defects could be explained upon these lines, where other more evident causes could be excluded. If so, this was important from the point of view of treatment and prognosis; for example, such patients had erroneously been considered as suffering from adenoids and operated upon for this condition, without, of course, any beneficial result.

The paper was discussed by Mr. G. JACKSON, Dr. DAN MCKENZIE, and Mr. LAKE, who complimented the speaker upon his statistics.

Mr. GEORGE JACKSON (Plymouth) then read a paper on

The Etiology of Auditory Meatal Exostoses,

dividing the cases into those that entirely blocked the meatus, those which did so partially, and those which merely caused a slight narrowing of the passage. He illustrated his remarks by a specimen of an interesting case which had caused complete occlusion and in which the patient's bone conduction was perfect, but whose aerial conduction power was one-twentieth of the normal. After removal the hearing improved for air conduction to one-half of the normal. He thought that if such growths did not materially interfere with discharge or with aerial conduction they might be neglected. Such conditions were not common, for out of 3000 cases of ear disease in the report of the Devon and Cornwall Hospital only 11 had been recorded, and of these only two required operation. He discussed their etiology, but could not arrive at any definite conclusion. They certainly generally occurred in connexion with exposure to sea-water, and he gave the results of some ethnological and geographical investigations in support of this contention, though he stated that von Trotsch quoted many cases apparently connected with chronic otitis media. The majority of the growths were cancellous and generally sessile.

In the discussion following Dr. H. JONES referred to a case that was bilateral, and upon which he had operated, in which there was no improvement of hearing, in which it was very difficult to find the membrane on the left side, and in which it was absent on the right.

Dr. DAN MCKENZIE (London) read a paper of considerable interest, and one showing a large amount of clinical investigation, on

The Clinical Value of the Labyrinthine Nystagmus Tests.

He included in his results many different diseases of the ear, in nearly all of which some labyrinthine trouble was suspected. The method consisted in estimating the time necessary to produce nystagmus by the application of certain fixed temperatures to the external surface of the membrana tympani. Water at two temperatures was used (so-called hot and cold tests), the relative temperatures being about 42° C. and from 22° to 24° C. The tension upon the drum was practically constant, being produced by a fixed head of water. The factors taken into account were the time necessary to produce nystagmus, the particular character of the eye movements produced, and any associated phenomena. He found that in health nystagmus appeared in from 20 to 40 seconds; in hyper-excitable states of the vestibular system it occurred in from five to 15 seconds; while in cases of diminished excitability the time was from 50 to 120 seconds, and when the labyrinth was not responsive no reaction followed. Vertigo was generally first experienced, its severity usually varying inversely to the induction period. In all cases both ears were compared before coming to any decision, and any nystagmus produced by testing one ear was allowed to pass away before making any tests upon the other ear. He found the reactions in cases of simple chronic middle-ear catarrh to be those of health, while in oto-sclerosis the results were widely different, and the reaction bore no relationship to the degree of deafness. Occupation deafness was referred to, but the numbers examined were too few to enable any conclusive results to be established. Three cases of hysterical deafness showed that the vestibular sense was impaired in proportion to the severity of the deafness. All the cases of neurasthenic deafness gave the reaction of hyper-excitability of the nervous mechanism, the induction period being very short. This contrasted markedly with cases of perceptive deafness. He found that the cochlear function was not always destroyed *pari passu* with the vestibular, and this was so in syphilis of the labyrinth. These tests he considered important in the large group of suppurative conditions, as they should show the extent to which the disease had progressed, and he found that in chronic uncomplicated suppuration of the middle ear, and in cases of acute mastoiditis, the reactions were normal or only slightly exaggerated, but in cases of circumscribed labyrinthitis the vestibular sense was impaired, whilst impairment was still further increased after the simple radical mastoid operation, possibly either because the resulting scar tissue in the neighbourhood interfered with the transmission of heat, or that the inflammation had destroyed the special sense-organ in the ampullæ. He gave many clinical results and from these inferred that in many conditions of ear disease the reactions were not sufficiently uniform to be of pathognomonic value, yet when taken into consideration along with other symptoms, as for example the hearing and the rotation tests, they were of assistance.

Dr. H S. BARWELL (London), in the discussion following, hoped that the investigations would be continued, especially upon normal individuals.

Dr. BARR thought that cold water applied to the membrana tympani was generally injurious.

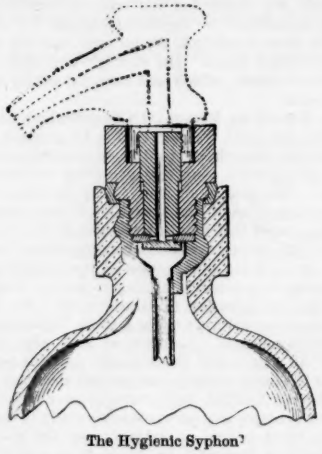
Dr. MCKENZIE, in replying, stated that the time of application of the cold water was too short to have any harmful effects and that no sickness or faintness had followed.

THE ANNUAL EXHIBITION.

(*Continued from p. 400.*)

IV.—SANITARY APPLIANCES.

THOUGH comparatively few in number, the exhibits under this head were interesting in variety, and comprised filters, mineral water apparatus, and disinfectants. A number of various forms of filters was shown on the stall of Messrs. Slack and Brownlow of Abbey Hey, Gorton, near Manchester; but attention was directed in particular to the Brownlow germ filter, constructed of porous porcelain, and to a modification of it for hospital use which provides a supply of hot or cold sterile water. Messrs. H. and T. Kirby and Co. of 14, Newman-street, London, W., exhibited their "ideal valve" feeder which we have already described as a useful hygienic appliance for the nursery. The valve is of solid glass and indiarubber collars and washers are properly dispensed with. An attractive series of sanitary polishes and accessories formed the feature of the exhibit of Messrs. Ronuk, Limited, of 86, York-road, Lambeth, London, S.E. Here were specimens of model floors in various woods polished by the Ronuk improved sanitary methods and also samples of liquid and concentrated Ronuk for hospital use. The Jeyes' Sanitary Compounds Company, Limited, of 64, Cannon-street, London, E.C., had a large stall literally packed with their disinfectant preparations, notable amongst which were those containing the non-toxic germicide "cyllin." The Hygienic Syphon Company Limited, of 20, Bucklersbury, London, E.C., exhibited their hygienic syphon which secures the acme of cleanliness as far as the storage and preservation of aerated water in a syphon are concerned. The accompanying diagram will help to explain its construction.



The Hygienic Syphon.

The porcelain spout (shown in dotted lines) is detachable and when the syphon is not in use a porcelain stopper may take its place (as, for example, in transit). By simply pressing the spout when in position a rubber valve below is pushed beyond a series of perforations in the delivery tube through which the water then passes. Amongst the advantages of the syphon are (1) simplicity of parts by which the most scrupulous cleanliness may be secured apart altogether from the impossibility of metallic contamination; (2) an easily cleaned reservoir; and (3) the detachable spout serves also as a key, so that the water can be reserved for private use. The use of the word "hygienic" in the name of this syphon is completely warranted. The Sanitas Company, Limited, of Limehouse, London, E., showed a number of disinfectant fluids, powders, and soaps, besides some apparatus for the convenient use of sulphur dioxide, formaldehyde, &c., for practical disinfection. The exhibit included a vaporiser to be used with "bactox" in certain respiratory diseases. At the stall of Messrs. B. Kühn and Co., of 16, Rood-lane, London, E.C., the applications of chinosol for antiseptic and disinfectant deodorising purposes found illustration in a series of interesting preparations.

V.—MINERAL WATERS, BEVERAGES, ETC.

Non-alcoholic beverages were a decided feature of the exhibition and it may be noted that Belfast enjoys a reputation for the purity and excellence of the mineral waters manufactured there. It has been said, indeed, that the cause of temperance in the city has been materially helped by the attractive quality of its "dry" ginger ale which happens to be a speciality of the place. The artesian well water-supply is remarkably pure and particularly suitable for the preparation of aerated beverages. Every conceivable kind of aerated water was to be found in the stall of

Messrs. Grattan and Co., Limited, of Belfast, who in spite of the purity of the water in its natural state go further and sterilise it previous to carbonating. Amongst special beverages may be mentioned their "crown soda" ginger ale (*sans sucre*), lithia, potash, quinine, and piperazine waters. Messrs. Ingram and Royle, of East Paul's Wharf, 26, Upper Thames-street, London, E.C., had a most complete representation of natural mineral waters, including Contrexéville, Æsculap, Vichy (Célestins, Grande-Grille, and Hôpital sources), whilst specimens also of the dry natural Carlsbad sprudel-salt were shown. The corporation of Bath drew the attention of the visitors to the merits of the historic thermal springs of that city by a series of photographs and medical reports and other literature. It is satisfactory to learn that British people are beginning to realise that in the thermal waters of Bath they possess a medical asset unrivalled by any spa abroad, including even Wiesbaden or Homburg. Similarly, the claim of Buxton thermal waters were represented, and here, again, a valuable water in the treatment of disease is available, equal to many highly extolled waters abroad. The environment of Buxton is notoriously healthy, and the authorities may be congratulated on giving considerable attention to the social requirements of a bath station, as well as to advanced balneotherapeutic methods. Messrs. Findlater and Co., London Bridge Corner, London, S.E., showed a number of medicinal waters of foreign origin, including the aperient sulphated waters of Carabana, Spain, the alkaline waters of Ems, the arsenical waters of Levico, the iron waters of Schwalbach, and the alkaline waters of Wildungen. The representatives of the Apollinaris Company of 4, Stratford-place, Oxford-street, London, W., explained the advantages of Apollinaris water in large stoneware bottles. The water keeps cool in these bottles, and competes with other mineral waters in regard to price. As is well known, the degree of alkalinity of Apollinaris water is considerably higher than other mineral waters, and hence its value in catarrhal affections. The exhibit included the natural aperient water "apenta," which is now well known as a convenient and effective bitter purgative. The attractions of the Royal Leamington Spa were illustrated in a series of photographs, guides, and publications, and it was made evident that the authorities there are leaving no stone unturned to bring this health resort into line with modern requirements. A well-known effective yet mild bitter purgative saline water is Friedrichshall, specimens of which were shown by Messrs. C. Oppel and Co., of 10 and 12, Milton-street, London, E.C. Grape juice appears to be coming into favour as a beverage mixed with plain or aerated water, while some have employed it for the "grape cure." Messrs. Schweppes, Limited, of 49, Pall Mall, London, S.W., exhibited their "Vindevie," which was recently reported upon in our columns. It is a sterilised grape juice with pleasant slightly acid flavour. There were also exhibited samples of "proset," dry and sweet, a non-alcoholic beverage with delicate fruity flavour, and dry ginger ale, which is said to help the "drink patient" out of his habit. Another excellent grape juice was exhibited by the Grape Juice Company, Limited, of 7, Great Tower-street, London, E.C. Cider was well represented by Messrs. W. Gaymer and Son, of Attleborough, Norfolk, who exhibited amongst other specimens some "dry" varieties, sound and of excellent flavour, and free from acidity. Bendle's meat port (Bendle, Limited, 41, Seething-lane, London, E.C.) was the only wine of the kind in the exhibition. As our analysis has shown, it is sharply distinguished from other wines by the fact that it contains actual nutritive materials in the shape of proteins.

VI.—PUBLICATIONS.

Stalls containing books of reference on medical subjects formed a relief from the spaces occupied with foods, drugs, surgical appliances, &c. Amongst the well-known publishers exhibiting recent additions to medical literature were Messrs. John Wright and Sons, Limited, of Bristol; the British Medical Association as publishers of the *British Medical Journal*, 429, Strand, London; Messrs. Henry Frowde and Hodder and Stoughton, Oxford; Messrs. D. Appleton and Co., 25, Bedford-street, Covent Garden, London; Mr. W. Erskine Mayne, 3, Donegall-square, West Belfast, who exhibited publications by Messrs. Baillière, Tindall, and Cox; Messrs. J. and A. Churchill, Messrs. Cassell and Co., Messrs. Macmillan and Co., Messrs. Methuen and Co., and the Cambridge University Press; Mr. H. K. Lewis, of 136, Gower-street, London; Messrs. Rebman, Limited, of 129, Shaftesbury-avenue, London, W.C.; W. B. Saunders Company, of Henrietta-street, Covent Garden, London, W.C.; and J. B. Lippincott Company, of 5, Henrietta-street, Covent Garden, London, W.C.

VII.—MISCELLANEOUS.

There were few exhibits this year coming under this section. In it may be mentioned a motor car by Chambers Motors, Limited, of Cuba-street Works, Belfast, designed specially for the use of medical men and described as being able to stand hard work, and economical as regards petrol consumption and running capacity; the special non-sagging bed mattresses of Messrs. John and Joseph Taunton, Limited, of Belgrave Works, Sherbourne-road, Balsall Heath, Birmingham; and the Aertex cellular clothing of the Cellular Clothing Company, of 72 and 73, Fore-street, London, E.C. In the last exhibit an interesting fabric was shown in the shape of a specially dyed red Aertex material for use in the tropics which prevents the passage of the actinic rays of the sun to the body but allows the red and orange to pass.

THE MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.

THE sixty-eighth annual meeting of this association was held, as has already been announced in THE LANCET, on July 22nd and 23rd at the West Riding Asylum, Wakefield, and at Leeds, under the Presidency of Professor W. BEVAN-LEWIS.

The morning session of the first day was devoted to the business of the association, which included the election to the roll of the society: As honorary members: Sir William Collins, M.P.; Professor Heinrich Obersteiner, Professor of Neurology in Vienna; and Professor Emil Kraepelin, Professor of Psychiatry at Munich. As corresponding members: Dr. Julian Moreira, superintendent of the Rio Asylum; and Dr. Alexander Pilcz, superintendent of the Nerve Hospital, Vienna.

The retiring President, Dr. C. A. Mercier, and his retiring coadjutors on the council having been cordially thanked, Professor Bevan-Lewis took the chair and read his address. After brief acknowledgments for the honour conferred upon him in his elevation to the presidential chair he announced as the subject of his address, The Biological Factors in Heredity. Whilst paying a tribute of admiration to the elaborate researches of Sir Francis Galton and Karl Pearson, and admitting the great utility of statistical studies in heredity when confined to their proper sphere, he maintained that the biological method was supremely that proper to the physician to study, and the only true method which would unravel the many problems of genetics. After dealing minutely with the Mendelian methods of research he devoted special attention to those apparently contradictory results which had been used by the statistician as arguments against the accuracy of Mendelian ratios. He showed that such apparent inconsistencies were the result of misinterpretation on the part of the opponents of Mendel's teachings, that most objections had been triumphantly met, whilst others were still awaiting more elaborate inquiry on the ground of their complexity, or the very recent date when Mendelian methods were first applied by Bateson, de Vries, Tschermack, and Correns. With a brief reference to mutation, as taught by de Vries, and to its incompatibility with the doctrine of minute continuous variations regarded by Darwin as the groundwork upon which evolution proceeded, he indicated the foreshadowing of this doctrine of the importance of discontinuous variation by Huxley in 1861. In dealing with the fallacies of interpretation whereby the biometrician had failed to reconcile Mendelian with statistical results, he dealt with the phenomena of segregation, its failure from definitely ascertained causes, especially in connexion with parthenogenetic phenomena in plants, and the probable struggle betwixt the sexual gametes—"selection-mating"—as it has been termed. Other sources of fallacy were shown to occur in the misunderstanding of what constituted "unit characters": the nature of the so-called

coupling of such units, the inheritance of coat-colour in rabbits and mice, as worked out by Bateson, Miss Durham, and others. The more intricate combinations of unit characters and their transmission were illustrated by descriptive charts. Dominance as a biological phenomenon was then referred to as contrasted with prepotency in the Darwinian sense, and it was shown to be a non-essential factor in establishing the accuracy of Mendel's law; whilst lantern slides were shown illustrative of partial and complete dominance. Lastly, purity of type was alluded to, and the application of Mendelian formulæ to disease, so far as already worked out. Illustrations of the transmission of the predisposing factors in disease, in accordance with Mendelian facts in human heritage, were discussed, the results of recent research being shortly detailed. Mendelian methods of interpretation bearing upon nervous and mental diseases were dealt with, and the statement made that "towards such as challenge the validity of Mendel's methods and would substitute statistical inquiry in their place as the only method for unravelling the mysteries of heredity, there can be no compromise."

The PRESIDENT distributed the prizes gained during the year as follows: Dr. Henry Devine, Long Grove Asylum, Epsom, the Gaskell prize, consisting of £45 and a gold medal, at the same time congratulating him on his recent success in the University of London; Dr. G. H. Grills, Chester Asylum, £15 and a silver medal; Dr. Colin McDowall, Hatton Asylum, Warwick, the bronze medal and £10.

On the proposition of Dr. MERCIER, seconded by Dr. G. H. SAVAGE, a hearty vote of thanks was passed to Professor Bevan-Lewis for his address, Sir JAMES CRICHTON-BROWNE adding an eloquent tribute to the President's work in the domain of the study of insanity.

On the evening of the first day the members and their guests dined together at the Queen's Hotel, Leeds. The President was in the chair, and among those supporting him were the Bishop of Wakefield. The toast of the evening, "The Medico-Psychological Association," was proposed by the PRESIDENT in a speech full of most interesting reminiscences, which concluded by an extremely hopeful outlook concerning the future of psychiatry. Other toasts were "The Leeds University," "The President," and "The Visitors," in addition, of course, to the usual loyal toasts.

The proceedings on the second day were opened with a paper by Dr. HELEN BOYLE entitled, "An Account of an Attempt at the Early Treatment of Mental and Nervous Cases." The essayist said that during her two and a half years as a County County medical officer in East London she had been appalled at the sight of mental patients being manufactured in the rough. People who were poor, unhappy, neglected, maltreated were turned into lunatics through sheer stress. All that could be done for a poor mother of ten children after childbirth was to give her a bottle of medicine and tell her to go home and rest. No hospital would take her, as she had no organic disease, and no asylum would take her, as she was not certifiable. Much good work was done in the limits imposed by small funds by a hospital which took nervous cases early—cases which, but for timely treatment, would probably have been merged into the insane. Dr. Boyle detailed the methods of treatment, and was able to point to extremely good results. The institution admitted only women, and patients from every kind of profession had been admitted.—The paper was discussed by the PRESIDENT, Dr. RAYNER, and Dr. OSWALD.

Dr. J. R. GILMOUR read a paper on the Mental Symptoms in Exophthalmic Goitre and their Treatment. He detailed with much minuteness the various symptoms, the outstanding features of which were irascibility, irritability, suspicion, and restlessness. In one case improvement suddenly set in after the administration of quinine had been commenced, and this was furthered by the administration of milk from thyroidless goats, and the latter treatment was helpful in nearly all the cases dealt with. Rest, taken in the open air, was of very great importance in Dr. Gilmour's view. A combination of bromide of patassium and belladonna was of great benefit. In cases of "tidal Graves's disease" he advocated partial thyroidectomy.—The paper was discussed by the PRESIDENT, Dr. G. SCOTT WILLIAMSON, Dr. BOWER, Dr. ORR, Dr. L. D. H. BAUGH, and Dr. HELEN BOYLE, and Dr. GILMOUR replied.

Dr. SCOTT WILLIAMSON read a paper on the Cerebro-spinal Fluid in General Paralysis and the Nervous Lues, in which he dealt with the chemical characters of the cerebro-spinal fluid and their diagnostic importance, confirmed by a review of 78 examinations, with special reference to the syphilitic reactions of Wassermann, Porges-Meier, and others.—The contribution was discussed by the PRESIDENT, Dr. R. G. ROWS, Dr. MCRAE, Dr. GILMOUR, and Miss WINIFRED MUIRHEAD (Glasgow), most of whom were also engaged in bacteriological work bearing on various mental states.

Dr. SCOTT WILLIAMSON'S other paper on the Bacillus Paralyticans, a contribution which criticised the work of Ford Robertson and others on this micrococcus, was the occasion of a keen debate, in which Dr. W. FORD ROBERTSON, Miss MUIRHEAD, Dr. MCRAE, and Dr. W. H. B. STODDART took part.—Dr. WILLIAMSON replied at some length on the points raised, but admitted that the subject was one of considerable difficulty, and there was not time for a full and adequate reply on the many points raised.

The next paper was one, prepared at short notice, by Dr. FORD ROBERTSON, on the Experimental Production of General Paralysis. The contribution was illustrated by some striking photographs of rabbits in which various definite symptoms had been produced.—Dr. ORR said that the evidence adduced by Dr. Ford Robertson of neuro-toxicity was very striking and the work came very much into line with some work which Dr. Rows and he were doing. He reminded members that three years ago Dr. Rows and himself published the results of toxic infection of the lymph paths leading up to the spinal cord, and the method they adopted was one which eliminated the fallacy of injury to the cord—namely, putting the toxin into a small celluloid capsule and placing that under the sciatic nerve of a dog, leaving it there for a time until it was clear that the toxin had escaped from the capsule and entered the lymph paths. But to make the research complete it was necessary to trace the histological evidence of that upward passage of toxins right along the nerve and the posterior ganglion root to the cord itself. They were able to say that the bacillus of Robertson and McRae was a highly toxic body, but pending further work, upon which they were engaged, it was best to suspend ultimate judgment. Changes were produced by it in the smaller vessels, with proliferation of the adventitia. Also, the nuclei lining the endothelial spaces in all directions were proliferated, especially the posterior nerve. The most striking point in regard to the cord was the dilatation of the central canal. The ependymal cells were proliferated several deep and the neuroglial cells about the ependyma showed marked proliferation, while the nerve cells showed nucleation.

Mr. L. O. FULLER read a very interesting paper on Alcoholism, Crime, and Insanity. He pointed out that children of the poor were often in conditions in which they were given every chance of acquiring the drink habit, and among their parents tubercle and syphilis were common. He regarded post-natal environment as a very great cause of degeneracy. Though the child might not be very intellectual he was a good imitator, and copied his parents' habits with great facility. One case admitted under his care recently was that of a girl, aged 22 years, who commenced to get drunk at the age of 11 years, and both her father and mother were heavy drinkers. At the age of 14 years she adopted immoral habits, and during the last eight years she had spent her time in drink, jail, and prostitution. By their eighteenth year some girls had had one or two illegitimate children. The most scientific way of dealing with degeneracy was one which aimed at removing the causes rather than alleviating the symptoms, a great desideratum being much greater elasticity in the educational system. If a person showed relapse he should have a period of instructive detention, with a view to prevent drink habits being firmly formed; this should combine medical instruction with disciplinary methods. He strongly objected to a predetermined sentence: to the youngster it was often a hardening process, it threw him into the ranks of the unemployed and often the unemployable, and finally he became very hostile. He was not usually a lunatic and he was not wholly responsible, but he was often capable of improvement by instruction and could be taught a handicraft. A short prison instruction could not give benefit to a person who was mentally backward. He advocated the establishment of receiving houses, into which such cases as he was describing could be admitted in the first instance. He strongly objected to the fixed term of three years; there were many cases in regard to which such a

sentence was unnecessary, and expressed his belief that there was much necessity for an alteration of our present system.—Dr. MERCIER, in discussing the subject, said that there were points in it with which he would agree, and others with which he did not agree; particularly he agreed in deprecating the stupidity of the fixed three years sentence. These people were sent to a reformatory, where it was felt that their condition was at any rate as much a disease as a vice, and being a disease, they were sentenced to a fixed term, in which he supposed it was anticipated their disease would be cured, and that the cure would take neither more nor less than that time. That led to what he did not hesitate to call abominations. Under the instruction of the Home Office the term "not exceeding three years" had become in practice a term of not less than three years. He had seen cases receive all the benefit they were likely to derive from reformatory treatment in six months, yet they were compelled to stay there another two and a half years, in which time they had mostly lost whatever ability to work which had remained in them. One man told him that he had forgotten the very names of the tools he used to work with when he went in. Again, when they went out there was no supervision over them, and in many cases they quickly got into the hands of the police again. And, as if to make such a sequel more likely, they were on discharge handed a sum of money which had been put by for them during their detention. Inebriates were on quite a different footing from lunatics; the former were much less certain in the matter of conduct. He did not agree that abstinence, or partial abstinence, from alcoholic drinks argued the possession of a superior power of self-control. Some people, having taken a certain, sometimes a small, quantity of alcohol turned against it and had no desire for more; others did not turn against it until they had been drinking for two or three days.—Dr. HEARDER said that in his locality the magistrates would not send a case to the reformatory unless it showed mental symptoms, but the sentence was not fixed—it ranged from one to three years. Moreover, the cases could be discharged on licence, so that it could be seen how they behaved themselves. And in their case the money which was put by for the patient was not handed to him, but to responsible relatives or other persons always at a distance, so that the patient had at least to get home before he had the means for obtaining any more drink.—Dr. JAMES STEWART said he thought that Dr. Mercier misused the term "self-control"; his own experience led him to say that in 70 per cent. of inebriates there was a weakened power of control compared with that possessed by the majority of the community. He believed that the inebriate was a different kind of person from the drunkard.—Mr. FULLER having replied, the session closed.

PREVENTABLE BLINDNESS.

THE Committee on "Preventable Blindness," which was appointed at the International Conference on the Blind, held at Manchester in July, 1908, has recently issued the following report:—

The subject of the prevention of the disease which so frequently causes blindness in newly-born infants is one that for many years has engaged the attention of all whose work has brought them into contact with the blind. At every conference that has been held during recent years relative to the welfare of the blind, whether at home or abroad, attention has been called to the urgency for taking satisfactory measures for the checking of this disastrous cause of blindness.

The medical libraries contain a host of papers and books which have treated of this disease, and of the blindness consequent thereon. Recent English literature has been summarised in the report of the British Medical Association Committee (*British Medical Journal*, May 8th, 1909), to which reference will be made further. The gist of these papers is to the effect: 1. That more than one-third of the blindness found in British blind schools is due to this one cause—infants born with good eyes are blinded by the disease within a few days of their birth. 2. The risk of blindness is entirely preventable by prompt and efficient treatment.

To this end it is now almost universally agreed, by both medical men and laymen cognisant with the subject, that the disease known as the "Ophthalmia of the New-born" should be scheduled as compulsorily notifiable. And it is believed that by such action this appalling source of misery and helplessness would be checked. In spite, however, of these urgent recommendations, no action has been taken by the British public health authorities, nor have these authorities, so far, availed themselves of their permissive powers to make the disease compulsorily notifiable.

At the International Conference on the Blind, held in Manchester in July, 1908, it was held that no sufficient steps had been taken to give publicity to the urgency of the matter. A representative committee was therefore appointed to consider the subject fully, and to make such recommendations as they might deem, not only advisable, but as likely to be of practical utility. At the first meeting of this committee two ophthalmic surgeons were coöpted as members of, and advisers to, the committee:—Mr. Robert N. Hartley (hon. surgeon, Leeds United Institution for the Blind and Deaf and Dumb), and Mr. N. Bishop Harman (oculist to the London County Council Blind Schools). These gentlemen were expected to advise on matters relating to the north and south of England respectively. During the sittings of this committee, another committee, instituted by the British Medical Association, has had this same matter under review. The two committees have acted upon quite independent lines, and the fact that they have arrived at similar conclusions and make virtually the same recommendations adds greatly to the weight of their recommendations.

The following are the recommendations of the committee appointed by the International Conference:—

1. That in the opinion of this committee the adoption by the public health authorities of the Early Notification of Births Act is urgent.

2. That in the opinion of this committee the disease known as the "Ophthalmia of the New-born" should be added to the list of diseases compulsorily notifiable under the powers of the Infectious Diseases (Notification) Act of 1889.

3. That in the opinion of this committee: (*a*) More definite teaching should be given to midwives on the seriousness of eye disease in children; and (*b*) they suggest that the Central Midwives' Board should issue more stringent instructions on the danger of "whites" in lying-in women.

With a view to obtaining more exact knowledge of the incidence of "blindness" in subsequent census returns, the committee recommend that the Registrar-General should be requested to define and classify "blindness" in his schedules in some such way as the following:—

1. Stone blind—i.e., the individual has no power to see the movement of fingers before the eyes.

2. Partially blind, i.e., in the case of—i. *Children.* Those who have not sufficient sight (even with the aid of glasses) to be taught in an ordinary school. ii. *Adults.* Those who have not sufficient sight (even with the aid of glasses) to earn a living by ordinary means.

In conclusion, the committee desire to emphasise the fact that the question is at the present juncture, and is likely to be in the future, of much greater importance than in the past. For the introduction and extension of the operation of the Employers' Liability Act is seriously affecting, and is likely to still more seriously affect, the earning powers of adult workers with defective vision.

(Signed) HENRY J. WILSON (Chairman).
N. BISHOP HARMAN.
CHAS. M. COLLINGWOOD (Hon. Sec.).
ROBERT N. HARTLEY.
EDITH WRIGHT.
THEO. WARNER.
WALTER LITTLEWOOD.
J. M. RITCHIE.
June, 1909. S. CLARE HILL.

NEW HOSPITAL FOR TORRINGTON (DEVON).—On August 4th Lady Gertrude Rolle formally opened the new cottage hospital at Torrington, which had been erected on a site given by the Hon. Mark Rolle, to whose memory and that of other local benefactors the building has been erected as a memorial. The hospital contains surgery, consulting room, operating theatre, matron's rooms, &c., and will provide accommodation for eight patients. The cost of the building was £1300, and as all this amount has been subscribed, the institution has been opened free of debt.

THE LANCET.

LONDON: SATURDAY, AUGUST 14, 1909.

Preventable Blindness.

THE fact that from 30 to 40 per cent. of persons in blind institutions have lost their sight from ophthalmia neonatorum or purulent conjunctivitis of infancy is indeed lamentable, and now that renewed attention is being devoted to this preventable disease we may hope that some adequate measures will soon be adopted to remove the evil. Some years ago the matter received careful consideration by the Ophthalmological Society of the United Kingdom and certain resolutions were adopted and placed before the authorities. The comparatively small financial outlay involved in carrying out these suggestions—a matter of some £7000 odd—was held to be prohibitive, in spite of the obvious fact that the cost of education and support of those blinded by the disease immeasurably surpasses this amount. In 1907 an energetic effort was made to induce the British Medical Association to take the matter in hand. The need for this action had been conspicuously shown by Mr. SYDNEY STEPHENSON'S book on "Ophthalmia Neonatorum," which gained the Association's Middlemore prize and which presented an admirable survey of what had been done in the past and of the large amount that yet remained to do in attacking the disease. As a result of the attention then directed to it a representative committee of the Association was formed, and after prolonged and exhaustive investigations a report was drawn up, and at the recent meeting at Belfast the report was discussed by the combined Obstetrical and Gynæcological and Ophthalmological Sections. It will be seen from our *résumé* of the proceedings (p. 459) that the principle of notification of the disease was approved, though the attendant difficulties in practice were fully recognised. Exception was taken, and we think rightly, to the suggestions as to treatment. In our opinion the disease is too serious and its consequences are too grave for the treatment, even in the matter of prophylaxis, to be left in the hands of unqualified people, and if it is relegated to the medical practitioner he ought to be allowed to adopt freely the methods which appear best to him.

Just before the Belfast meeting the report of a committee on preventable blindness, which was appointed at the International Conference of the Blind, held in Manchester in July, 1908, was issued (see p. 477). The similarity of the recommendations to those made by the committee of the British Medical Association shows the unanimity of opinion existing as to the best means of dealing with the difficulty. Notification is again advanced as the central feature of the plan of campaign. That it is productive of good results is shown by the example of Manchester, where a voluntary system of notification has resulted in a diminution of cases by 40 per cent. From another part of the country comes a report showing the awakening of public conscience to the continuance of an evil which is acknowledged to be preventable and must be considered consequently a scandal to our civilisation. In Staffordshire an influential meeting of mayors, chairmen of urban district councils, town clerks, and medical officers of health was recently held to discuss the prevention of ophthalmia neonatorum. It was presided over by the Earl of HARROWBY, who in the course of his speech gave a concrete example of the financial loss due to those disabled by blindness early in life. The cost of educating a blind child up to the age of 18 years without teaching him a trade is £500, whereas the cost of educating a full-sighted boy for the nine years he was at school was only about £30. A simple calculation shows that £15,980 are wasted in Staffordshire alone in educating children blind through neglect. At this meeting notification of the disease was also advocated.

There can be no doubt, in our opinion, that notification is the first step which should be universally adopted. Another preliminary is that of extending the knowledge of the extreme gravity of the disease amongst those likely to come in contact with it. To this end the Central Midwives Board has drawn up a leaflet of instruction which will be distributed to midwives.[1] These are steps quite in the right direction; but it must be recognised that they are preliminaries only, and useless unless some scheme is devised for dealing with the cases by qualified practitioners with the greatest promptitude as soon as they come under observation. And here again comes in the pecuniary question of ways and means for the preservation of the national health—a question which is coming so much to the fore in regard to the medical treatment of school children. It is incumbent upon the medical profession to bring all its influence to bear upon the State for the prevention of such terrible disabilities as ophthalmia neonatorum inflicts upon thousands of helpless infants, but it is the duty of the State to provide that the practitioners who act as the trustees of the children's eyesight shall be properly remunerated for fulfilling the active responsibilities which that trust will entail.

Preventive Medicine and the Lower Animals.

THOSE who can recall the battles which raged around the "Origin of Species" and the "Descent of Man" will not need to be reminded that the human being does not readily relinquish his supremacy or share with others that which he believes to be his natural prerogative. And even when man felt constrained by the force of evidence to admit his biological associations he did not easily accept the inference that he might have to share with the lower animals the heritage of certain diseases. His own maladies were clinically so unlike those of the lower animals that he was inclined to use this fact as an argument against rather than in favour of the doctrine of evolution. But time has altered our attitude and epidemiologists are beginning now to wonder whether the clue to much that is still unexplained in pathology may not be

[1] THE LANCET, August 7th, p. 409.

made clear by closer attention to the diseases of animals and the laws of parasitology. It was only when we turned our gaze from the human subject to the insecta that the mysteries of malaria and yellow fever faded away; and similarly when we examined the life history of the goat the difficulties as regards Malta fever largely disappeared, and by studying plague in the rat and in the flea much in the malady as it attacks human beings became explicable. Thus it comes about that the annual report of Mr. STEWART STOCKMAN, chief veterinary officer of the Board of Agriculture and Fisheries, has an interest for the epidemiologist—an interest which should increase year by year as the nterdependence of human and animal diseases becomes more fully appreciated.

Although the foot and mouth disease of cattle does not in these days give rise to much recognised disturbance in man, it is well known that the milk from cows suffering from this malady may produce, especially in children, an illness attended with aphthous stomatitis, swelling of the tongue, and fœtor of the breath, or, on some occasions, severe tonsillitis. It is therefore reassuring to learn from Mr. STOCKMAN'S report of the prompt measures which were taken in an outbreak of this disease in Scotland—the first for 15 years. The initial outbreak occurred in two cow-sheds, and all the cattle therein, together with those on immediately adjoining premises which were still free from the disease, were promptly slaughtered. Of the 111 animals on the actually infected premises only two cows and one calf had escaped infection up to the time of slaughter. But the infectivity of this disease seems a remarkable one and, notwithstanding the wholesale slaughter, the malady was transferred to other premises about three-quarters of a mile distant, which the owner had taken for the purpose of carrying on his business, and it was impossible to explain how the disease had been carried since none of the attendants had suffered from the malady nor had any manure been transported from the old to the new premises. But as an illustration of the disease-carrying capacity of manure it may be mentioned that the malady in question was transferred to another set of premises by soakage of drainage from a manure heap through the intervening wall. These three outbreaks involved the slaughter of 148 bovine animals on infected premises and 96 on premises dangerously situated. This remarkable outbreak appears to have arisen from a small consignment of hay from Holland, an infected country, and Mr. STOCKMAN points out that the history of the epidemic renders it necessary to revise current views as to retention of virulence on the part of the virus of foot and mouth disease, as, contrary to what was formerly believed, it seems that in cool weather virulence inside a bale of hay may be retained for from three to four months.

The facts in the story of glanders serve, like the study of exclusively human diseases—if there are any—to show how the prevalence of any given malady may be immediately increased by searching for unrecognised cases. It was found in the case of glanders that the more frequent application of the mallein test in horses in contact with a declared case materially increased the number of horses per outbreak as compared with previous years. Apparently the chief difficulty in the control of glanders arises from the lenience of local authorities in determining what animals are to be regarded as having been in contact with infection. This, in Mr. STOCKMAN'S view, is a much more serious matter than the fact that the mallein test does not reveal the disease during the incubation period, and that therefore a second test in invaded stables becomes necessary so as to detect these cases. There were in 1908 as many as 2433 horses found to be infected with glanders, and we have been wondering whether cases amongst human beings are sought out as thoroughly as amongst cattle. Apparently cases in men are more numerous than is commonly believed. In connexion with anthrax Mr. STOCKMAN narrates a case of the introduction of this disease through the medium of bone manure which had been applied to a field of grass which was afterwards kept free from animals for nearly a year, during which a crop of hay was removed from it. Nine cows were then introduced for grazing purposes and three died from anthrax—a most instructive story.

The expense of transporting European pedigree cattle to the Transvaal, where they have either to be kept in stables or incur the imminent risk of contracting Texas fever by being pastured with indigenous cattle, has led to the Veterinary Department of the Board of Agriculture, in collaboration with similar departments of the Transvaal and East African Protectorate, undertaking inoculation experiments against this disease, the animals after inoculation being sent to the Colonies and pastured on farms infected with the disease in question. It is thought that if these experiments prove successful a considerable stimulus will be given to the export trade of pedigree cattle. In connexion with this work Mr. STOCKMAN has, in collaboration with Sir JOHN MCFADYEAN, carried out some investigations into red-water fever in England, and he has been able to show that the blood of animals suffering or recovering from English red-water fever will infect other susceptible cattle after an incubation period of from six to ten days, the characteristic parasite, Piroplasma bigeminum, being found in the blood corpuscles, in some cases there being red colouration of the urine. But in connexion with this latter symptom Mr. STOCKMAN points out that although red urine was the circumstance which gave the disease one of its names, red-water fever, this manifestation is only apparent in perhaps the minority of cases, and consequently it is preferable to call the disease piroplasmosis. Mr. STOCKMAN has also made some instructive investigations as to the part played in England by ticks in relation to English red-water fever, and although the Ixodes ricinus and the Hæmaphysalis punctata are both, he thinks, capable of carrying the parasites which cause the disease, he has only so far obtained experimental proof relative to the latter. These ticks, after engorgement upon infected and recovered animals, were kept in the laboratory until they produced progeny, and the larvæ were then allowed to suck healthy animals. Larvæ from mothers which had sucked infected animals yielded negative results, as also did nymphæ which had sucked infected animals as larvæ. But adults which had sucked as nymphæ animals with red-water fever gave the disease to the next bovine host. There can be no doubt therefore, as Mr. STOCKMAN states, that the red-water fever of England is a piroplasmosis which is inoculable

and which spreads from animal to animal by ticks. It has also been found that the seasonal prevalence of red-water fever in this country corresponds with that of the greatest prevalence of adult ticks. Mr. STOCKMAN finally furnishes some useful advice as to the prevention of red-water fever, whether by inoculation, by the reduction of the number of ticks by dipping, by keeping cattle off the pastures for a time, or by stocking the pastures with sheep, which animals are not susceptible to red-water fever, but which attract the ticks. This work on the part of the Veterinary Department of the Board of Agriculture and Fisheries is of much value, and we shall look forward to an extension of it.

The Report of the Royal Commission on Whisky and other Potable Spirits.

WHATEVER may be the opinion of the liquor trade and of the public of the findings contained in the final report of the Royal Commission on Whisky and other Potable Spirits there can be no question of the thoroughness with which the Commissioners have attacked the numerous difficult points which such an inquiry was bound to bring before them. And yet as the outcome of their long deliberations the position is left much where it was. The present report, in fact, goes very little further than the conclusions arrived at by the Select Committee on British and Foreign Spirits which was appointed by the House of Commons in 1890, when almost every one of the questions considered by the present Commission was submitted to the Committee and reported upon by it. Lord JAMES of HEREFORD and his distinguished colleagues indeed express their conviction of the correctness of the conclusions of this Committee. There will therefore be some disappointment experienced by those who had hoped to find in the new report suggestions regarding fresh legislation upon the subject, or the inauguration perhaps of a new system of control by which the quality of the supply of potable spirits could be improved. There are practically no recommendations of the kind in the Blue-book, although throughout the report the Commissioners generally express concurrence with the findings of the 1890 Committee, a concurrence which gives, perhaps, a species of strength to their views.

In the opinion of the Commissioners it is not desirable, either in the interests of the trade or of the public, to enforce certain standards, to insist upon exact definitions or upon the restriction of particular materials in regard to the manufacture of potable spirits, and all propositions towards these ends, around which so much discussion has taken place, fall to the ground. The Commissioners refuse to believe that there is any importance attached to the question whether whisky is pot or patent still, and the value of whisky in the treatment of disease depends, they hold, essentially on the ethylic alcohol. Accordingly, they are unable to recommend that the use of the word "whisky" should be restricted to spirit manufactured by the pot-still process, and their conclusion is that whisky may be defined as "a spirit obtained by distillation from a mash of cereal grains saccharified by the diastase of malt." Scotch whisky is defined as whisky distilled in Scotland, and Irish whisky as whisky distilled in Ireland. Broad as this definition is, it obviously, and as we think very properly, excludes the use of such materials as potatoes, beet, and molasses. In regard to brandy, the Commissioners practically adopt the definition of the British Pharmacopœia, their conclusion being that the term "brandy" is applicable to a potable spirit manufactured from fermented grape-juice and from no other materials. The compounded spirit, however, known as British brandy should in their opinion be still entitled to the name. This last is a concession to trading interests, which throughout have been considered. It is further concluded that the application of the term "brandy" in this country cannot be controlled by the nature of the apparatus or process used in the distillation of the spirit. Here, again, the claims of the pot and patent still are put upon a common level, and more than once the Commissioners dismiss any suggestion that pot-still spirit is superior for any purpose to patent-still spirit. It may be doubted whether the view will meet with general acceptance that the alcohol and the alcohol alone accounts for all the results of prescribing a potable spirit. The popular view again that potable spirits are more wholesome for being matured by age will, we imagine, die hard, in spite of the Commissioners' statement that they were unable to obtain actual proof that such was the case. Practical experience, which for some definite reason decides at one time in favour of the use of brandy and at another in favour of whisky, is surely based on something more tangible than mere flavour. Those who use spirituous drinks are aware that whisky, brandy, and rum are different in their physiological effects. There is much here that is as yet beyond the ken of chemistry or physiology, but it is rash to conclude, we think, that all the effects of a potable spirit are due simply to alcohol.

The Commissioners by no means profess, however, that the question has reached finality as a result of their very careful inquiry, for they suggest, we are glad to see, the introduction of a statutory provision by which a magistrate can receive the assistance of two assessors, being persons of practical or scientific knowledge of the matters involved, to sit with and advise him in cases where the nature of a potable spirit is under consideration. It may also be desirable, they think, to form under authority a panel from which such assessors may be selected. Lastly, they refer to the question of forming a committee of skilled persons under Governmental authority who might assist in mitigating some of the difficulties of the subject, by advising on technical questions which affect both the administration of the Sale of Food and Drugs Acts by local authorities and the practice of public analysts. In our opinion this is one of the most important matters to which the Commissioners have drawn attention. Repeatedly in these columns we have urged the appointment of a court of reference composed of scientific authorities who would be competent to deal with the technical questions, of which the examination of whisky and other potable spirits is an example, and which so constantly arise in the administration of our laws against adulteration.

Annotations.

"Ne quid nimis."

THE RATIONAL PUERPERIUM.

As long ago as the year 1773 White of Manchester urged that women should be allowed to get up early after their confinements. In 1899 Küstner revived this idea and recommended that puerperal women should be encouraged to get out of bed during the first few days of the puerperium. In a paper recently read before the Edinburgh Obstetrical Society[1] Dr. F. W. N. Haultain, from an experience of 100 cases, put forward a plea for what he termed the rational treatment of the puerperium. The mode of management which he recommended was that the woman be encouraged to sit up in bed to meals on the second day, and subsequently as soon as she felt inclined that she be allowed to leave her bed and sit up for an hour. On the third and fourth day two hours were to be spent out of bed morning and evening, and the fifth day was to be practically spent out of bed altogether with the exception of a few hours' rest in the afternoon. Under this treatment his patients left the hospital on the tenth day. Of 100 cases treated in this way the morbidity (i.e., of which a temperature over 100° F. or a pulse-rate of over 90 for 12 consecutive hours were taken as the signs) was represented by three. Examination on the day of leaving the hospital showed the pelvic organs to be normal except in two cases where a slight retroversion of the uterus was found. In 48 of the cases examined six weeks or later involution was good, and the position of the uterus was normal except in the two cases mentioned. Dr. Haultain maintains that labour is not a disease and that the puerperium cannot be considered a convalescence. He believes that involution is influenced mainly by the circulation, and exercise of the abdominal muscles will improve their tone, accelerate the abdominal circulation, and among other advantages diminish constipation. The position of the patient can have but little influence on the occurrence of septic inflammation or upon involution, and the erect posture is less likely to produce displacements of the uterus than the dorsal position. In the same way he thinks that early rising will tend rather to diminish than to increase the chances of the occurrence of phlebitis and embolism. The blood of a puerperal woman is highly fibrinous, and to prevent coagulation the circulation should be stimulated, and this is most readily done by muscular exertion. Most of the speakers who took part in the discussion at Edinburgh were not entirely convinced by the arguments brought forward. The danger of backward displacements was thought to be considerably greater than the figures quoted in the paper showed, and Dr. J. W. Ballantyne pointed out that among the Javanese, who were compelled by custom to rise for a short time during the first day and move about the house, prolapse was exceedingly common and embolism frequent. Although it may be true, as Dr. Haultain maintains, that the normal puerperium is not a convalescence from disease, yet it may well be regarded as a convalescence from the troubles and often marked trials of pregnancy. Further than this, in a large majority of women the rest in bed, even if it be only for ten days, has a most beneficial effect upon their general health. That it is possible without any serious risk of injury to make a woman get up on the first few days following her confinement is quite true, but that it is expedient is very doubtful. We grant that fortunate results may be met with in a small series of cases, such as those recorded by Dr. Haultain, but the adoption of this method of treatment on the large scale would, we feel sure, lead to a number of undesirable complications. It is interesting to have a scientific confirmation of the fact that women can get up within a short time of their confinements and suffer no harm, as indeed a great many among the poor do at the present time, but we do not think that it has been proved that such a procedure is desirable for the majority.

[1] THE LANCET, July 31st, 1909, p. 297.

THE AMELIORATION OF LIFE FOR CHILDREN.

THAT the systematic medical inspection of children in elementary schools would lead to the necessity of providing for the treatment of the large number who would be found to be physically defective was a conclusion that could be foreseen from the time when this great social measure was first mooted. Our readers are aware of the practical difficulties that have arisen in devising a scheme for the systematic treatment of many thousands of diseased children which shall not leave any child uncared for, shall neither press too hardly upon poor parents nor yet undermine their proper sense of responsibility, and shall be equitable to the ratepayers and, at the same time, to the medical practitioners who will be responsible for the children's treatment. One thing is quite certain. Whatever be the amount of existing disease which has to be grappled with, the future watchword of this national movement must be "Prevention" rather than "Cure," not only because cure is in a great many cases impossible of attainment, but also because in the long run prevention is the cheaper way of rearing a healthy generation. And the business of prevention cannot be confined to the school, for no amount of sanitary supervision of class-rooms and playgrounds, or of hygienic instruction imparted to the children can be of any avail while dirt, squalor, and penury are the conditions which dominate their home life. What is wanted is the general amelioration of life for large numbers of children to whom we are imparting "education" which they are totally unable to assimilate, and which in too many instances affords a cruel commentary upon the facts of existence as they know them. In our last issue we published a paper read at the recent Leeds Health Congress by Dr. James R. Kaye, medical officer to the West Riding county council, to which he gave the suggestive title, "Ameliorative Measures Indicated by School Medical Inspection," and in which he put forward a plan by which the general amelioration of life in its broadest sense for the children of the masses, both by improvement of home conditions and by prevention of disease, may be made something more than a pious phrase on the lips of drawing-room reformers. After very properly remarking that the primary object of inspecting school children was not to compile statistical and anthropological figures, but to put the children in the way of becoming healthy and useful men and women, Dr. Kaye laid down a scheme by which the proper help may be given to each individual child. It consists in the formation of a "Care of Children Committee" in each district, having the district education subcommittee as the nucleus, to which will be added special workers each entrusted with the personal supervision of a certain number of children, and directly responsible to the committee for their care and progress. The chief sphere of activity of these missionaries of health would be in the children's own homes. They would do their best to see that the parents took proper advantage of the expert advice given by the medical officers who had inspected the defective children, or who had given advice as to treatment. They would use their influence to make the homes brighter and cleaner—a matter in which, to achieve success, zeal and righteous indignation must assuredly be tempered with tact and sympathy; and they would bring to the notice of local charitable persons or agencies cases worthy of

assistance, and in general concentrate their special efforts on the amelioration of such conditions as are known to be favourable to the development of disease. The principle of voluntary coöperation with specially appointed committees for the safeguard of the public health is not quite new, for it will be remembered that the Majority Report of the recent Poor-law Commission recommended the formation of medical assistance committees which were to help the proposed "Public Assistance Authorities" and to include amongst their numbers voluntary workers in the cause of the public health. If Dr. Kaye's scheme is to take effect on any wide scale—and we shall be glad to hear that it is being given a trial outside Yorkshire—we are inclined to think that the special workers will have to be paid. Some doubt may be felt as to whether they should all actually have seats on the care committees, of which they will be in some sense the servants, but they should certainly have representation on those bodies. But this is an administrative matter which we need not now discuss, for we have fulfilled our purpose in commending Dr. Kaye's scheme of amelioration to the careful study of all who are interested in the final solution of the problem of the children's health.

THE IBERIAN TYPE AND DISEASE.

MEDICAL geography is a science in embryo, but already good work has been done in the direction of estimating the incidence of disease in particular districts. It would be of interest if in future medical topographers would note whether disease runs in families of a particular type in the districts under examination. Is cancer, for instance, a disease particularly of "the old black breed," the Iberian or brunettist peasantry who descend, in all probability, from a pre-Celtic race and are everywhere to be found side by side with fair-haired and fair-complexioned Saxons? In certain towns, such as Exeter in the far south-west and Thurso in the far north, fair and dark types are constantly found in sharp contrast, for fair and dark have lived immemorially juxtaposed in both places. In Exeter there was a Cornish or Celtic quarter of the city well on into the Middle Ages. Here, then, the inquiry is easily conducted, but there are more rural districts where fair and dark continue in well-defined separate existence. We have in view now the narrow belt of cultivated land, some three miles wide, which lies between the virgin heaths of the New Forest and the shore of Christchurch Bay. Here philology suggests that certain families belong to the Jutic or Saxon invasion of the early ages, while certain place names point to Celtic or pre-Celtic patches of population having lingered on in secluded corners, as they are known to have lingered in the Fens and elsewhere. A prevailing clan at Highcliffe is Frampton. (*Query*, "fram," in Scandinavian, "forward" or a "ship"? Whence we get "Fram-tun," "forward-settlement," or "ship-settlement.") A few miles to the westward Hengistbury Head marks the site of a very early Saxon or Jutic "burg," whence settlers may have pushed forth along the neighbouring shores. In all this belt of land to the south of the forest the local type is often remarkably blonde, in the case of the children certainly. At Bransgore, which juts with its woods across the Forest boundary to the north, the Iberian types are found. Now "Bran" is a Celtic name, and one is tempted to believe that Brans-"gore" means the wedge of land where Bran, an early Briton, left descendants whose type remains. The Iberian, or very dark type, is common all over Hampshire. In some remote villages, as at Bosham in the neighbouring county, one might fancy oneself in the West of Ireland, to judge by the appearance of the dark-haired and blue- or grey-eyed inhabitants. In his interesting natural history study of Hampshire and the New Forest, Mr. Hudson has much to say of the Forest Iberians. In many manifestly English peasant families, he avers, he has found one raven-tressed ivory-complexioned child, usually of intelligence superior to that of its brothers and sisters, whom he holds to be a cast-back to a prehistoric type. On the other hand, Gilbert White, a Hampshire man, thought that all Whites were Gytes, descendants of Gytas or Jutes. The point of these remarks, however, is not meant to be philological. What the medical profession would like to know, and what members of that profession might be interested to ascertain, is how far do certain diseases attack one or other racial type by preference.

THE SIXTEENTH INTERNATIONAL MEDICAL CONGRESS AT BUDAPEST: THE ABSTENTION OF ROUMANIA.

THE preliminary arrangements of the forthcoming International Medical Congress, which will take place at Budapest between August 29th and Sept. 4th, have now been completed; and the preparation of the programme of the various fêtes and official functions which will take place in connexion with it is at present engaging the attention of the committee, which is working hard to make this Congress at least as memorable as its predecessors. The accommodation of members of the Congress has been made a matter of especial care, and a number of rooms in hotels and lodging-houses have been reserved by the Central Travelling Ticket Office (V. Vigadó-tér 1, Budapest) on behalf of those who intend to be present but have not yet enrolled themselves as members. At the same time, it will be well for all such people to write and signify their intention of attending, enclosing their subscriptions, in order that they may profit by the reduced fares and other advantages offered to members of the Congress by the various railway and steamship companies serving Budapest. Those desirous of obtaining further information should communicate with the Secretary-General of the Congress at VIII Esterházy-utca, 7, Budapest, until August 19th, and at VIII. Museum-körút, 6/8, Budapest, after that date. In England we have for many years succeeded fairly well in keeping professional questions out of the arena of party strife in which rival politicians and sectarians contend. This has been fortunate for all concerned, both for the patient and the practitioner, because medical science is from its nature something apart from the various artificial distinctions which society has created for itself. In ague or syphilis the Whig and the Tory take the same kind of physic; in certain diseases of nerve or muscle a leading light in Calvinism resorts to galvanism just as a latitudinarian would do. It therefore seems to us truly unfortunate that a kind of schism due to political causes has arisen in connexion with the approaching International Congress of Medicine in Budapest. The nature of the trouble is disclosed in a circular which has been forwarded to us by "Le Comité National Roumain pour la Participation au XVI-ème Congrès International de Medecine." The circular is signed by 27 professors in Jassy and Bucharest, the list being headed by Dr. Thomas Jonnesco, dean of the Faculty of Medicine in Bucharest. It states that the medical men of Roumania have decided not to take part in the International Congress of Medicine to be held in Budapest because a Roumanian lady married to a Hungarian Member of Parliament had been sentenced to imprisonment by a Hungarian court of law, her alleged offence being that she had told some Roumanian children that it was for them a right and a duty to cultivate their national language. Everybody will admit that the lady was right and that the Hungarian judge or magistrate was wrong; the sentence, moreover, was not carried into effect owing to the

interposition of the Emperor Francis Joseph, King of Hungary. It is therefore greatly to be desired that some means may be found of pacifying the justly offended Roumanian medical men, and inducing them to reconsider their decision.

MUNIFICENT GIFT FOR CANCER RESEARCH.

THE late Mr. Harry Barnato bequeathed a sum of money, amounting to a quarter of a million sterling, for the establishment of a charity in memory of his brother, Mr. Barney Barnato, and of his nephew, Mr. Woolf Joel, both of whom died before him. It was the desire of the testator that the institution when founded should be devoted mainly to research work. We therefore cordially welcome the announcement that the trustees, Mr. S. B. Joel, Mr. J. B. Joel, and Mr. S. G. Asher, have decided upon applying the bequest to the building and endowment of an institution for the study and treatment of cancer. We heartily congratulate these gentlemen in their choice, and we believe that no better employment of the munificent gift could have been adopted. The new establishment will be administered, except as regards its finance, in connexion with the Middlesex Hospital. Those connected with that hospital have had a vast experience in dealing with patients suffering from cancer, and a most painstaking research by competent observers is being carried on within the special "cancer wing" connected with the hospital. Fortunately a site was available adjoining the hospital and this has been duly acquired. It is proposed to erect a building containing 50 beds and a research laboratory, but no definite plans have yet been made. An increase of facilities for investigation into the nature of, and treatment of, cancer, under the supervision of the authorities of a great hospital constitutes a grand addition to our scientific and humane resources, and the trustees of the Barnato bequest may feel assured that the fullest and best use will be made of the increased opportunities afforded for research work, while the unfortunate victims of the disease will largely benefit, inasmuch as many more beds will be available for their assistance. It is also right to mention that the Middlesex Hospital authorities will not be relieved in any way from their present responsibilities in connexion with the main hospital or with the special cancer wing. The Barnato fund will be entirely devoted to the building and endowment of the new buildings. In this way it is hoped and believed that medical science will receive most valuable assistance, for it is only by constant and prolonged investigations that advance can be made in the prevention and treatment of a disease the exact nature of which so far baffles inquiry.

A PERMANENT APPENDICULO-VESICAL FISTULA.

IN the *Journal of the American Medical Association* of April 3rd Dr. R. Cadwallader reported a very rare sequel of appendicitis. A girl, aged eight years, suffered from nocturnal incontinence of urine which would not yield to the usual remedies. At the age of 12 it was noticed that mucus and pus were passed in the urine with pain. These symptoms were more marked when the bowels were loose. At times she suffered also from colicky pain, which never confined her to bed or suggested appendicitis. At the age of 17 years fæcal matter was observed in the urine from time to time. This matter usually took the form of seeds of fruit, husks of grain, mucus, and brown débris, and was not always of a fæcal odour. At times gas of a decidedly fæcal odour was passed with the urine. The patient thought that at times she passed urine by the bowel. She came under Dr. Cadwallader's care at the age of 20 years. He tried to establish beyond doubt the existence of a vesico-intestinal fistula. Inflation of the bladder and of the intestines was performed without success. Iron given by the mouth could not be found in the urine nor did methylene given by the mouth escape by the rectum. For days nothing appeared in the urine, and then blackberry seeds, pearl barley, and striped muscle would appear according to the diet. The cystoscope showed no inflammation of the bladder, but on the fundus was a dark patch, at one spot on the border of which was some inflammatory tissue. Laparotomy was performed. A large adhesion was found between the ileum and the fundus of the bladder and was separated without revealing any communication. Under this the tip of the appendix was found adherent to the bladder at about the peritoneal reflexion over the uterus in the middle line. The appendix was about 7 centimetres long. A cuff containing peritoneum and muscular coat was turned back from either end and the middle part was cut away. The stumps were disinfected, the cuffs were ligatured over the stumps, and the abdomen was closed. Recovery was uneventful. It is remarkable that there was no history of a definite attack of appendicitis. Rupture of an appendicular abscess into the bladder is common, but only two cases appear to have been recorded in which this gave rise to a permanent fistula. Dr. W. W. Keen has reported a case in which "the appendix became soldered to the bladder, producing a urinary-fæcal fistula." This patient was a man who, at the age of 24 years, passed in the urine seeds, pus, and intestinal débris. The fistula existed for some years before operation.

TYPEWRITING AND METABOLISM.

THE *Journal of Biological Chemistry* for June contains an interesting study of the metabolism of man during the work of typewriting, by Mr. Thorne M. Carpenter and Mr. Francis G. Benedict. In the past 30 years there has been a remarkable development in the use of mechanical machines for writing, and the typewriter of the present day has very largely displaced handwriting, particularly in commercial correspondence. The major movements involved in typewriting are much greater than those involved in writing with a pen, and this suggested that there might be a corresponding increase of metabolism as a result of using a typewriter as compared with handwriting, even on the basis of the elimination of energy per 100 words. The typewriter shows a marked increase in speed over handwriting and entails an enormous amount of work, which appears to be done without excessive fatigue by women who are not muscularly as well developed as is the ordinary man. It is important to have some idea of the amount of energy required for writing with such appliances, and the problem is of great interest and serves admirably to indicate the possibilities of accurate scientific instruments for studying questions having a practical everyday value. The general plan of experiment was as follows. The subject entered a special chamber, constituting a respiration calorimeter, usually after a meal, and sat quietly in an arm-chair, with a table before him, reading for an hour or so until the calorimeter was in perfect equilibrium. At this time analyses were made of the residual air, and the heat measurements were begun. After the resting period the subject used a typewriter, a record being made of the number of words written and the time occupied. Owing to marked differences in the temperaments of the individuals and in the degree of skill in typewriting, a comparison is at best somewhat speculative, but the data obtained afford a general idea of the work involved in typewriting. It would appear that the work of writing from 1500 to 1600 words per hour on the typewriter results in an increase over the resting metabolism of 10 to 14

grammes of carbon dioxide, 10 to 13 grammes of oxygen, and 20 to 30 calories of heat per hour. Of these factors of metabolism it is highly probable that the truest factor is presented by the total energy exchange as directly measured. From the studies of gaseous exchange made by Zuntz and his associates it has been computed that there is an hourly energy expenditure of about 160 calories over and above the resting maintenance requirement of a man weighing 70 kilogrammes walking along a level road at a rate of 2·7 miles per hour. It is clear, therefore, that the work of typewriting calls for very much less transformation of energy than does that of ordinary walking, but Mr. Roosevelt has scientific sanction for his inclusion of typewriting amongst the strenuous activities of life. We have agreed with the ex-President in this estimate, since we discovered that a quarter of a pound weight was necessary to depress one key of a commercial typewriter, which may be considered a standard machine. From the point of view of office life, the exercise appears to us to be a distinct advantage to the operator.

THE TUBERCULOSIS EXHIBITION AT THE WHITE CITY.

THE Tuberculosis Exhibition, which was inaugurated in the early summer at the Whitechapel Art Gallery by the National Association for the Prevention of Consumption and Other Forms of Tuberculosis with such success that 70,000 people visited it in its East-end quarters, has now been moved to Shepherd's Bush, where it forms one of the features of the White City. On August 6th Lord Balfour declared the Exhibition open in the Machinery Hall in the presence of Sir William S. Church, Sir Hermann Weber, Dr. C. Theodore Williams, Dr. Edward Squire, Mr. H. Hammond Smith, and others prominently associated with the national prevention of tuberculosis. The exhibits are in all respects similar to those shown at Whitechapel, which we have described. A fresh inspection has confirmed our opinion of their educational value, and we were especially impressed with the excellence and completeness of the section devoted to the Edinburgh anti-tuberculosis scheme, with its large scale reproduction of a ward at the Victoria Hospital for Consumption at Craigleith, and the many striking diagrams and models each with its salutary lesson. The Paddington Tuberculosis Dispensary also makes a good show, and the many large photographic views of human sleeping-dens, veritable nests of tuberculosis, serve to draw prominent attention to the urgency of the housing problem in our large cities as a prime necessity of the national health. There is, however, one defect in connexion with the present exhibition which we should like to see remedied. We visited it after sunset and found it difficult to see the various objects and charts properly, as they are only lighted by the arc-lamps hanging from the roof of the large Machinery Hall which are quite inadequate for the purpose. This is a great pity, especially as the many trading stalls situated beyond the Exhibition in the same hall are all brightly lit with their own electric light. At the time of our visit these were attracting far more attention than the Tuberculosis Exhibition through which people passed to reach them. In fact, by 9 o'clock, many of its models were being covered up for the night, and the lessons to be derived from entering the model "ideal" and the "real" living rooms of the poor consumptive were quite lost, because an equal darkness pervaded both, even the wide open windows of the latter not admitting enough light from without to show its features properly. We think, too, that prominent notices might be put up outside the Machinery Hall and in some prominent places in the grounds calling attention to the Tuberculosis Exhibition, the existence of which does not seem to be generally known amongst the attendants. This is the more to be regretted as a large number of holiday-makers in London may be expected to visit Shepherd's Bush during this month, and the Tuberculosis Exhibition must be made as attractive as other shows in the grounds if it is to have a proper educational effect. We hope that the appeal for funds to put the Tuberculosis Exhibition on a permanent travelling basis which is now being circulated by the National Association for the Prevention of Tuberculosis may meet with sufficient response, and may add that any who wish to help this beneficent movement should communicate with Dr. J. J. Perkins, Secretary of the Association, at 20, Hanover-square, London, W.

THE PATHOLOGY OF LANGUAGE.

"THE chemists have called 'caloric' what they ought to have called 'calorific.' The Lavoisierian nomenclature, whatever it merits in other respects, is a system of philological monstrosities in which it is fortunate when the analogies of language are only violated and not reversed." So said Sir William Hamilton, and justly. To take an immediate instance: Lavoisier's coinage, "oxygen," can, in philological strictness, mean only that which is "begotten of acid," not that which begets it (as he meant to convey)—Διογενής, for instance, on the analogy of which it is formed, meaning only "Jove-born," not "Jove-bearing." And so on, *ad infinitum*. Sir William Hamilton's compatriot, John Stuart Mill, after endorsing his dictum that "to the Schoolmen the vulgar languages are indebted for whatever precision and analytic subtlety they possess," follows it up with a trenchant onslaught on the harm wrought to language and, *pro tanto*, to exact thinking, by the unscholarly use of words in spoken and written discourse. It will hardly be believed, he says in effect, what circumlocutions the philosophic or scientific thinker is driven to in order to avoid a word which, as originally coined, would have served his purpose perfectly but which has, by unintelligent use, been so deflected from its true meaning that some substitute for it has to be found, at whatever cost. So many men, he adds (writing in 1856), "without even the semblance of an education," are now professional authors, that the language is becoming steadily spoiled for those who can employ it legitimately. And he gives a long list of examples which may be found in the fourth edition of his "Logic." Even in a book which, within the last 18 months, has had middle-class readers by the million, written as it is by a "professional author" who comes under Mill's category, we read of the protagonist's "lying prone on his back"—a *bêtise* which a first year's student in anatomy who had been taught the difference between "pronation" and "supination" could not possibly have perpetrated. To what uses language can be degraded is apparent to anyone whose daily walk may be between hoardings covered with advertisements the pretentious terminology of which would make Milton, as well as Quintilian, "stare and gasp." 60 years ago D'Israeli, in his "Tancred," made delicious fun of the worn-out phraseology then in vogue, much of which survives, with tenacious vitality, after wounds like those of Hamilton and Mill and D'Israeli himself, that should have been mortal! What Mr. George Wyndham in his brilliant preface to the reprint of that "well of English undefiled," North's "Plutarch," calls the "charnel house of decayed metaphor" (meaning the fetid common-places of conventional diction written and spoken), is still drawn upon by the platform declaimer and the prolific novelist to an extent that makes one despair of the future of our language. But such phraseology seems endowed with a charmed life and we shall still be reading of a controversialist "taking up the cudgels"

[who takes up "cudgels?" and why more than one?] or "embarking on the next feature on which this question hinges," till we are well-nigh driven to envy the blind or the deaf-mute his privations, or the unlettered his ignorance, or to surmise that Milton, could he be called from the tomb, would almost repent of his having vindicated the "art of printing."

GERMAN TOURS FOR MEDICAL MEN.

THE ninth German tour for medical men will commence on Sept. 3rd and will continue till the 20th, the work of organisation being conducted by the German Central Committee for Medical Tours (*Zentralkomitee für ärztliche Studienreisen*). The permanent address of the general secretary of this committee is Dr. A. Oliven, Berlin N.W. 6, Luisenplatz 2–4 (Kaiserin Friedrich-Haus für das ärztliche Fortbildungswesen), but in connexion with the forthcoming tour he will from August 28th to Sept. 3rd have an office in the Grand Hotel Hungaria in Budapest, to which all communications should be forwarded. The preliminary business will commence on the forenoon of Sept. 2nd in the lecture-room of the Physical Institute in Budapest, when Dr. Sig. von Gerlöczy will deliver an address on the local warm springs, after which visits will be paid to the warm baths of the city and to the Saxlehner bitter water springs, under the guidance of Professor A. von Bokay. The party will leave Budapest by train at 7 A.M. on Sept. 3rd, and will spend that and the three following days in various places in Hungary and Austria, the towns visited on those days being successively Pystian, Trenczin-Teplitz, Siofok, Balaton-Fuered, and Abbazia. In all these towns visits will be paid to places of medical interest, such as bathing establishments, sanatoriums, hospitals, &c.; receptions will be held, and addresses will be delivered by local notabilities. Leaving Abbazia on Sept. 7th at 7.30 A.M. the party will proceed by steamer to Venice, where the afternoon and the whole of the next day wil be spent in sightseeing and entertainments. On the 9th the party will arrive at Genoa at 8 A.M. and will leave at 4 P.M. by the North German Lloyd steamer *Prinz Ludwig* for Algiers, which will be reached on the 11th at 8 A.M. The five days from the 12th to the 16th inclusive will be spent mostly at sea, when an address will be delivered daily, three of the subjects discussed being cancer, neurasthenia, and the hygiene of health resorts. The steamer is timed to call at Gibraltar on the 12th at 5 P.M. and at Southampton on the 16th at 1 P.M., and to arrive at Antwerp on the 17th at 11 A.M. The last of the formal meetings will be held on board the steamer on the 19th during the passage from Antwerp to Hamburg, where the party will disperse.

A TELEGRAM from the Governor of Mauritius to the Secretary of State for the Colonies stated that 6 cases of plague, with 5 deaths, were reported during the week ending August 5th, and the Governor of Hong-Kong reported 3 cases of plague with 3 deaths during the week ending August 8th.

Mr. Edward Douglas Madge, M.R.C.S. Eng., L.R.C.P. Lond., has received the King's Royal licence and authority to accept and wear the Cross of Officer of the Star of Roumania, conferred upon him by His Majesty the King of Roumania in recognition of valuable service rendered by him.

WE are requested to call attention to the change of address of the London Post-Graduate Association. All communications should now be sent to 20, Hanover-square, W.

SANITATION IN WEST AFRICA.[1]

EARLY in January, 1908, plague broke out at Accra in the Colony of the Gold Coast, and as considerable alarm was experienced lest the disease should spread to other places in West Africa Professor W. J. R. Simpson was asked by the Secretary of State for the Colonies to proceed to Accra to take over the control of the arrangements for dealing with the threatened epidemic. He accordingly left England for the Gold Coast on Jan. 18th, accompanied by Dr. J. A. Haran of the East African Medical Service as his assistant. He was also instructed to visit other towns and districts in the West African colonies of Sierra Leone, the Gold Coast, and Southern Nigeria to inquire into their sanitary condition. He likewise received instructions to confer with the local authorities respecting their quarantine laws in order that these might be brought into harmony with modern practice. While conducting his investigations in West Africa Professor Simpson availed himself of the opportunities he found for inquiring into the effectiveness of the existing organisation and equipment of the medical service in these colonies from the public health point of view. This report, which is now issued as a Parliamentary paper by His Majesty's Stationery Office, contains 90 printed pages of folio and is illustrated by 80 photographs with 13 maps and plans.

In the present report only a summary of the investigations into the plague epidemic is given, as the detailed report on the outbreak is being published separately by the Government of the Gold Coast. From this summary we find that from January to October, 1908, the notified plague cases in the Gold Coast colony numbered 344, of which 300 proved fatal, yielding a case mortality of 86·6 per cent. The epidemic which commenced at Accra was carried, by panic-stricken natives fleeing for refuge, to other places in the colony, among which may be mentioned Nianyano (a village of less than 1000 inhabitants, where 64 persons died from the malady), Annamaboe, and Brewa. The last-named village, though 80 miles from Accra, is only seven miles distant from Cape Coast Castle, to which place infection was conveyed, but only two deaths occurred. The outbreak at Accra, where 157 deaths were recorded, was mainly bubonic in type and was associated with a plague epizootic among rats. The prevalence in the outlying villages was of the pneumonic kind and was accompanied by no observed infection or mortality in rats. The actual source of the plague and how it was brought to Accra are not given in the published summary. Prior to Professor Simpson's arrival a public health committee had been formed at Accra and certain measures had been adopted for cleansing the town, isolating the sick, segregating the contacts, demolishing infected houses, and for destroying rats. Later, preventive inoculation by Haffkine's method was carried out and was welcomed by the people, no fewer than 35,000 persons submitting to the operation without a single untoward result. A laboratory was established for the purpose of aiding the diagnosis of plague and for the preparation of Danysz's rat virus. A land cordon was formed round Accra to prevent the escape of infected persons into the surrounding villages. Persons whose business required them to leave the town had to submit to prophylactic inoculation and were supplied with passports which bore the thumb marks of the possessor, who also carried a certificate that he had been inoculated signed by a Government medical officer. Measures, too, were taken to prevent infection being carried by ships to other ports on the Gold Coast or neighbouring colonies. These measures appear to have been entirely successful in getting rid of the disease. As the colonies of Sierra Leone, the Gold Coast, and Southern Nigeria had different quarantine laws some confusion at first arose in dealing with vessels arriving at the various ports, and this circumstance led Professor Simpson to advise that the chief seaports should be properly equipped, so that by means of medical inspection, isolation of the sick, and provision for disinfection they could abolish quarantine along with its vexatious restrictions upon shipping and commerce. But it is admitted that native deck passengers

[1] Report to the Colonial Office by Professor W. J. R. Simpson on Sanitary Matters in Various West African Colonies and on an Outbreak of Plague in the Gold Coast. Printed for His Majesty's Stationery Office by Darling and Son, London. Price 9*d*.

would still require special treatment. Uniformity of port regulations, it is pointed out, would be of great advantage to all the colonies concerned. Much has already been done to act upon the advice given by Professor Simpson, but more remains to be accomplished before the port equipment of these colonies is complete.

As regards the sanitary condition of the chief towns and trading centres in the three colonies of Sierra Leone, Gold Coast, and Southern Nigeria, Professor Simpson visited and inspected a number of places and reported upon their sanitary circumstances and administration. He prefaces his remarks by mentioning that owing to the absence of any complete system of registration of deaths he is unable to give any statistical evidence as to the effect of insanitary conditions on the health of Europeans or natives. Nor could he obtain trustworthy data for compiling a sick-rate. But he gives us to understand that neither sickness nor mortality among Europeans is anything like so great as it was in the past. He draws attention to the importance of good housing upon the health of European residents; special attention he finds has been paid in some places to improving the means for storage and protection of the water-supplies used by European officials, but public health measures have still to be taken for the benefit of the general population. His report gives details of the conditions existing in Freetown, Accra, and Lagos, as well as in some other trade centres. He mentions in general terms the insanitary conditions of the places he inspected. In the Gold Coast Colony alone he visited over 50 places and the chief defects common to nearly all of them were the lack of protection of wells, absence of good surface drainage and consequent malarial conditions during rains, unnecessary crowding together of huts upon area notwithstanding the abundance of unoccupied land, unhealthy placing of huts with obstruction of light and ventilation, and the existence of rank vegetation close to dwellings. Most of these conditions, it appears, can be easily remedied or prevented altogether; but there is no special health or sanitary department belonging to each colony interested in, and responsible for, this work. The climate of West Africa, particularly in the interior and away from the coast, is no worse and no more depressing than some other tropical regions; but the prevailing conditions are usually so primitive and so insanitary that there is considerable risk of injury to the health of Europeans who have to reside among them. Professor Simpson thinks that at present sanitary measures need to be concentrated especially on the towns, villages, rest-houses, and encampments. The large marshes away from the villages and towns have little to do with the unhealthiness of the coast. Sanitation need not involve the reclamation and drainage of the West African marshes unless these are close to inhabited places. He gives some rules for laying out new villages on sanitary lines. All this leads up to the need of creating a special health organisation to improve the present insanitary conditions, and he gives some detailed suggestions for constituting a new health authority. We understand that Professor Simpson, when giving evidence recently before the Departmental Committee which the Secretary of State for the Colonies appointed to inquire into the West African Medical Staff, laid before that body his scheme for establishing a special health department in each colony, making it a branch of the West African Medical Staff separate in its functions and its officers not transferable to other medical duties. Those who are interested in sanitation in tropical countries will find much information in Professor Simpson's detailed account of the sanitary condition of Freetown, Accra, Sekondi (the "gateway of the interior"). Cape Coast, Lagos, Forcados, Calabar, and other places described in the latter portion of this interesting report. We are quite in agreement with the contention that if these West African towns and villages are to be rendered healthy their supervision must be undertaken by skilled and specially trained responsible sanitary officials, under whose advice schemes for water-supply, drainage, excrement and refuse disposal, housing and town planning will be carried out, as well as measures for preventing the spread of epidemic and endemic diseases, and the keeping of a strict watch over the actual state of streets and dwellings. Such officials, too, would see to the enforcement of by-laws and regulations framed for the improvement of the public health and for the protection of the native populations.

METROPOLITAN HOSPITAL SUNDAY FUND.

AT the Mansion House on July 28th the Lord Mayor presided at a meeting of the Council of the Metropolitan Hospital Sunday Fund, the object of which was to receive the report of the Committee of Distribution and to order the payment of awards to hospitals, dispensaries, and nursing associations.

The report of the Committee of Distribution stated that the executors of the late Mr. George Herring would pay to the treasurer of the Fund £24,000, being the balance of income available from the estate, which, with £1352 received in dividends, &c., upon securities transferred to the Fund, made the total income from this source to date £25,352. The committee recommended that this sum should be added to the collections, making the total of the Fund to date £67,951, in which is included £2000, the balance of the legacy of £10,000 under the will of the late Mr. Herbert Lloyd; £900, being the legacy, less duty, of the late Mr. Edwin Gayford; and £500 on account of the legacy of the late Mr. C. E. Layton. This year 258 institutions had applied for grants from the Fund, being one less than in 1908. Two institutions were considered ineligible. The committee recommended the distribution of £67,212 to 164 hospitals and institutions, 59 dispensaries, and 30 nursing associations. 5 per cent. of the total sum available for distribution was appropriated to the purchase of surgical appliances during the ensuing year, and 2½ per cent. for district nursing associations.

Sir WILLIAM CHURCH, in moving that the report be received, said that this was the first time that the Battersea General Hospital—usually known as the Antivivisection Hospital—had been included in the list of institutions receiving a grant. He explained that the reason why this institution had not previously appeared on the list was that the hospital was not founded and maintained with the sole object of relieving the sick and suffering poor, but was also founded and maintained for keeping prominently before the public the work of antivivisectionists. The members of its medical staff were narrowed down to medical men who, rightly or wrongly, did not believe in vivisection, and the distribution committee had felt that in these circumstances they were not justified in granting an award to an institution thus limited in its scope and work. This year the committee had been approached by various members of the council, including some of the clerical members, with regard to the Battersea Hospital, and the committee, while still disapproving of the way in which the hospital was carried on, desired to bring the matter before the Council. If the Council determined that a grant should be made the committee would amend the grant recommended and advise a grant on the full basis, which would double the proposed amount and make it £97 10s.

Lord LEITH OF FYVIE seconded the proposition.

Mr. THOMAS BRYANT moved an amendment to the effect that the grant should be omitted. He said that the hospital cast a great slur upon the profession generally, and he knew that cases had gone from the Antivivisection Hospital to the Bolingbroke Hospital which had been badly treated.

There being no seconder the amendment was not put to the meeting.

Sir HENRY BURDETT hoped that the authorities of the hospital in question would purge themselves of their pretence as to the special advantages claimed from the antivivisectionist's point of view. He hoped that now they had obtained the grant they would treat disease in a straightforward and honest manner.

The report having been adopted and the awards ordered to be paid, a vote of thanks was accorded to newspapers which had pleaded the cause of the Fund and the meeting terminated with the usual courtesies to the chairman.

The following is a list of the awards recommended:—

GENERAL HOSPITALS.

	£	s.	d.
Charing Cross Hospital	1328	3	4
French Hospital	385	13	4
German Hospital	709	11	8
Great Northern Central Hospital	1266	16	4
Guy's Hospital	1679	3	4
Hampstead General Hospital	449	11	8
Italian Hospital	218	16	8

	£	s.	d.
Kensington General Hospital	*Nil.*		
King's College Hospital	1744	3	4
London Hospital	6501	0	0
London Homœopathic Hospital	473	8	4
Phillips's Memorial Homœopathic Hospital	42	5	0
London Temperance Hospital	748	11	8
Metropolitan Hospital	1022	13	4
Mildmay Hospital	305	10	0
Miller Hospital and Royal Kent Dispensary	265	15	0
North-West London Hospital	310	18	4
Poplar Hospital	619	13	4
Prince of Wales's General Hospital, Tottenham	877	10	0
Royal Free Hospital	1457	1	8
St. George's Hospital	198	5	0
St. John and St. Elizabeth Hospital	203	13	4
St. John's Hospital, Lewisham	164	16	8
St. Mary's Hospital	2551	5	0
St. Thomas's Hospital	208	0	0
Seamen's Hospital Society	1703	0	0
The Battersea General Hospital	97	10	0
The Middlesex Hospital and Convalescent Home	2784	3	4
University College Hospital	2545	16	8
Walthamstow Hospital, &c.	138	18	4
Wandsworth, Bolingbroke Hospital	356	8	0
West Ham Hospital	545	19	4
West London Hospital	1381	5	0
Westminster Hospital	1386	13	4

SPECIAL HOSPITALS.

CHEST HOSPITALS.

City of London Hospital for Diseases of the Chest, Victoria Park	920	16	8
Hospital for Consumption, Brompton	3141	13	4
Mount Vernon Consumption Hospital, Hampstead	1557	16	8
Royal Hospital for Diseases of the Chest, City road	601	5	0
Royal National Sanatorium (Bournemouth)	108	6	8
Royal National Hospital for Consumption (Ventnor)	270	16	8

CHILDREN'S HOSPITALS.

Alexandra Hospital for Hip Disease	360	15	0
Banstead Surgical Home	39	0	0
Barnet Home Hospital	54	3	4
Belgrave Hospital for Children	329	6	8
Cheyne Hospital for Incurable Children	108	6	8
East London Hospital for Children, Shadwell	969	11	8
Evelina Hospital for Sick Children, Southwark	*Nil.*		
Home for Incurable Children, Hampstead	60	13	4
Home for Sick Children, Sydenham	162	10	0
Hospital for Sick Children, Great Ormond-street	1191	13	4
Infants' Hospital, Westminster	160	6	8
Kensington Hospital for Children and Dispensary	106	3	4
Paddington Green Hospital for Children	297	18	4
Queen's Hospital for Children, Hackney-road	949	0	0
Royal Waterloo Hospital for Children and Women	195	0	0
St. Mary's Hospital, Plaistow	303	6	8
St. Monica's Hospital, Brondesbury	86	13	4
Victoria Hospital for Children, Chelsea	845	0	0
Victoria Home, Margate	43	6	8
Hospital for Hip Disease, Sevenoaks	59	11	8

LYING-IN HOSPITALS.

British Lying-in Hospital, Endell-street	130	0	0
City of London Lying-in Hospital, City-road	200	0	0
Clapham Maternity Hospital	52	0	0
East-End Mothers' Home	91	0	0
General Lying-in Hospital, Lambeth	130	0	0
Plaistow Maternity Hospital	52	0	0
Queen Charlotte's Lying-in Hospital, Marylebone-road	553	11	8
Home for Mothers and Babies, Woolwich	80	3	4

HOSPITALS FOR WOMEN.

Chelsea Hospital for Women	305	10	0
Hospital for Women, Soho-square	422	10	0
Grosvenor Hospital for Women and Children, Vincent-square	196	0	0
New Hospital for Women, Euston-road	17	6	8
Samaritan Free Hospital, Marylebone-road	426	16	8

OTHER SPECIAL HOSPITALS.

Cancer Hospital, Brompton	*Nil.*		
Central London Ophthalmic Hospital, Gray's Inn-road	167	18	4
Central London Throat and Ear Hospital, Gray's Inn-road	10	16	8
Female Lock Hospital, Harrow-road	240	10	0
Gordon Hospital for Fistula, Vauxhall Bridge-road	47	13	4
Hospital for Diseases of the Throat, Golden-square	*Nil.*		
Hospital for Epilepsy, Paralysis, and other Diseases of the Nervous System, Maida Vale	273	0	0
London Fever Hospital, Islington	325	0	0
London Throat Hospital, Great Portland-street	24	18	4
Middlesex Hospital, Cancer Wing	257	16	8
National Dental Hospital, 149, Great Portland-street	48	15	0
National Hospital for the Diseases of the Heart, Soho-square	179	16	8
National Hospital for the Paralysed and Epileptic	1084	8	4
Royal Dental Hospital of London	356	6	8
Royal Ear Hospital, Dean-street	40	1	8
Royal Eye Hospital, St. George's-circus	311	15	0
Royal London Ophthalmic Hospital, City-road	1097	8	4
Royal National Orthopædic Hospital, Great Portland-street	290	6	8
Royal Sea Bathing Hospital, Margate	205	16	8
Royal Westminster Ophthalmic Hospital, Charing Cross	132	3	4
St. John's Hospital for Diseases of the Skin	81	5	0
St. Mark's Hospital for Fistula, City-road	228	11	8
St. Peter's Hospital for Stone, Covent-garden	62	16	8
West End Hospital for Diseases of the Nervous System	560	6	8
Western Ophthalmic Hospital, Marylebone-road	122	8	4

CONVALESCENT HOSPITALS.

	£	s.	d.
All Saints' Convalescent Home, St. Leonards-on-Sea	27	1	8
All Saints' Convalescent Hospital, Eastbourne	433	6	8
Ascot Priory Convalescent Home	92	1	8
Brentwood Convalescent Home for Children	10	16	8
Charing Cross Hospital Convalescent Home, Limpsfield	65	0	0
Chelsea Hospital for Women Convalescent Home, St. Leonards	48	15	0
Deptford Medical Mission Convalescent Home, Bexhill	19	10	0
Friendly Societies' Convalescent Home, Dover	108	6	8
Hahnemann Convalescent Home, Bournemouth	32	10	0
Hanwell Convalescent Home	15	3	4
Hastings, Fairlight Convalescent Home	26	0	0
Hemel Hempstead Convalescent Home	21	13	4
Hendon, Oasulston Home	71	10	0
Herbert Convalescent Home, Bournemouth	21	13	4
Herne Bay Baldwin-Brown Convalescent Home	65	0	0
Homœopathic Hospital Convalescent Home, Eastbourne	10	16	8
London Hospital Convalescent Home, Tankerton	78	0	0
Mary Wardell Convalescent Home for Scarlet Fever	65	0	0
Metropolitan Convalescent Institutions, Walton	444	3	4
Ditto Ditto Broadstairs	292	10	0
Ditto Ditto Bexhill	552	10	0
Metropolitan Hospital Home, Cranbrook	16	5	0
Mrs. Gladstone's Convalescent Home, Mitcham	92	1	8
Mrs. Kitto's Convalescent Home, Reigate	54	3	4
Police Seaside Home, Brighton	54	3	4
St. Andrew's Convalescent Home, Clewer	108	6	8
St. Andrew's Convalescent Home, Folkestone	195	0	0
St. John's Home for Convalescent and Crippled Children, Brighton	24	18	4
St. Joseph's Convalescent Home, Bournemouth	48	15	0
St. Leonards-on-Sea Convalescent Home for Poor Children	108	6	8
St. Mary's Convalescent Home, Broadstairs	162	10	0
St. Mary's Convalescent Home, Shortlands	24	18	4
St. Michael's Convalescent Home, Westgate-on-Sea	37	18	4
Seaside Convalescent Hospital, Seaford	162	10	0

COTTAGE HOSPITALS.

Acton Cottage Hospital	98	11	8
Beckenham Cottage Hospital	88	16	8
Blackheath and Charlton Cottage Hospital	86	13	4
Bromley, Kent, Cottage Hospital	137	7	8
Bushey Heath Cottage Hospital	38	0	0
Canning Town Cottage Hospital	96	8	4
Chislehurst, Sidcup, and Cray Valley Cottage Hospital	69	9	4
Coldash Cottage Hospital	23	16	8
East Ham Cottage Hospital	74	7	10
Eltham Cottage Hospital	85	11	8
Enfield Cottage Hospital	76	18	4
Epsom and Ewell Cottage Hospital	50	18	4
Hounslow Cottage Hospital	34	17	8
Kingston, Victoria Hospital	94	11	7
Livingstone Dartford Cottage Hospital	99	13	4
Mildmay Cottage Hospital	43	6	8
Reigate and Redhill Cottage Hospital	98	17	9
Sidcup Cottage Hospital	43	6	8
Tilbury (Passmore Edwards) Cottage Hospital	54	3	4
Willesden Cottage Hospital	105	9	0
Wimbledon Cottage Hospital	61	15	0
Wimbledon (South) Cottage Hospital	53	10	0
Wood Green Cottage Hospital	75	16	8
Woolwich and Plumstead Cottage Hospital	54	3	4

INSTITUTIONS.

All Saints, Highgate	28	3	4
Firs Home, Bournemouth	41	3	4
Free Home for Dying, Clapham	111	11	8
Friedenheim Hospital for the Dying	342	6	8
Hospital for Invalid Gentlewomen, Harley-street	108	6	8
Invalid Asylum, Stoke Newington	37	18	4
Royal Mineral Water Hospital, Bath	54	3	4
Santa Claus Home, Highgate	65	0	0
St. Catherine's Home, Ventnor	21	13	4
St. Luke's House, Pembridge-square	169	0	0
St. Saviour's Hospital and Nursing Home	108	6	8
Sunshine Home of Recovery, Hurstpierpoint	*Nil.*		
Winifred House, Holloway	63	18	4

DISPENSARIES.

Battersea Provident Dispensary	210	3	4
Billingsgate Dispensary	81	5	0
Blackfriars Provident Dispensary	19	10	0
Bloomsbury Provident Dispensary	16	5	0
Brixton, &c., Dispensary	51	8	7
Brompton Provident Dispensary	20	11	8
Buxton-street Dispensary	21	13	4
Camberwell Provident Dispensary	81	5	0
Camden Town Provident Dispensary	16	5	0
Chelsea, Brompton, and Belgrave Dispensary	44	8	4
Chelsea Provident Dispensary	14	1	8
Child's Hill Provident Dispensary	15	3	4
City Dispensary	65	0	0
Clapham General and Provident Dispensary	24	18	4
Deptford Medical Mission	26	0	0
East Dulwich Provident Dispensary	57	8	4
Eastern Dispensary	43	6	8
Farringdon General Dispensary	55	5	0
Finsbury Dispensary	45	10	0
Forest Hill Provident Dispensary	40	1	8
Greenwich Provident Dispensary	36	16	8
Hackney Provident Dispensary	20	11	8
Hampstead Provident Dispensary	65	0	0
Holloway and North Islington Dispensary	17	6	8
Islington Dispensary	62	16	8
Islington Medical Mission	67	3	4
Kennington and Vauxhall Provident Dispensary	15	3	4

	£	s.	d.
Kensal Town Provident Dispensary	14	1	8
Kentish Town Medical Mission	22	15	0
Kilburn, Maida Vale, and St. John's Wood Dispensary ...	37	18	4
Kilburn Provident Medical Institution	54	3	4
London Dispensary, Spitalfields	20	11	8
London Medical Mission, Endell-street	130	0	0
Margaret-street Hospital for Consumption	33	11	8
Metropolitan Dispensary	67	3	4
Mildmay Medical Mission Dispensary	17	6	8
Notting Hill Provident Dispensary	19	10	0
Paddington Provident Dispensary	39	0	0
Public Dispensary, Drury-lane, W.C.	44	8	4
Queen Adelaide's Dispensary	27	1	8
Royal General Dispensary	23	3	4
Royal Pimlico Provident Dispensary	46	11	8
Royal South London Dispensary	50	18	4
St. George's, Hanover-square, Dispensary	36	16	8
St. John's Wood Provident Dispensary	56	6	8
St. Marylebone General Dispensary	58	10	0
St. Pancras and Northern Dispensary	39	0	0
South Lambeth, Stockwell, and North Brixton Dispensary...	41	3	4
Stamford Hill, Stoke Newington Dispensary	55	5	0
Tower Hamlets Dispensary	50	18	4
Walworth Provident Dispensary	16	5	0
Wandsworth Common Provident Dispensary	15	3	4
Westbourne Provident Dispensary	19	10	0
Western Dispensary	80	3	4
Western General Dispensary	109	8	4
West Ham Provident Dispensary	13	0	0
Westminster General Dispensary	48	15	0
Whitechapel Provident Dispensary	37	18	4
Woolwich Provident Dispensary	41	3	4
NURSING ASSOCIATIONS.			
Belvedere, Abbey Wood	8	5	0
Brixton	28	0	0
Central St. Pancras	21	0	0
Chelsea and Pimlico	28	0	0
East London	182	0	0
Hackney	33	1	0
Hammersmith	49	0	0
Hampstead	21	0	0
Isleworth	8	5	0
Kensington	49	0	0
Kilburn	8	5	0
Kingston	35	0	0
London District	525	0	0
Metropolitan (Bloomsbury)	56	0	0
North London	70	0	0
Paddington and Marylebone	49	0	0
Peckham	8	5	0
Plaistow	78	10	0
,, (Maternity)	103	5	0
Rotherhithe	8	5	0
St. Olave's (Bermondsey)	28	0	0
Shoreditch	63	0	0
Sick Room Helps Society	14	0	0
Silvertown	12	8	0
South London (Battersea)	63	0	0
Southwark	42	0	0
South Wimbledon	20	13	0
Tottenham	7	0	0
Westminster	28	0	0
Woolwich	28	18	0

MEDICINE AND THE LAW.

A Certificate of the Cause of Death followed by an Inquest.

IN a letter published in THE LANCET of July 31st, p. 321, referring to an annotation in our issue of July 24th, p. 243, Dr. E. J. Toye quoted from Section 20 of the Births and Deaths Registration Act, 1874 (37 and 38 Vict., cap. 88), the words, "In the case of the death of any person who has been attended during his last illness by a registered medical practitioner, that practitioner shall sign and give to some person required by this Act to give information concerning the death a certificate stating to the best of his knowledge and belief the cause of death." From this Dr. Toye argues that a medical man has no discretionary power to withhold a certificate which, in the words of the annotation referred to, "cannot conscientiously be granted." The word "shall," no doubt, is mandatory, but the medical man has to consider the facts of his case and to apply the law to them. He has to consider whether he did attend the deceased during his last illness, and in the case commented upon in the annotation the coroner's jury, and the coroner who presided, appear to have had doubts upon this point, although they did not employ the words of the section. At all events, if the certificate had been refused and adverse comment had been made, that would have been one of the answers open to the medical man. Again, he may not have such "knowledge and belief" as will justify him in assigning a cause. "The best of a medical man's knowledge and belief" is an expression which does not imply absolute certainty, but equally it does not include mere suspicion or an opinion for the formation and confirming of which his opportunity has been insufficient. As to that sufficiency he is the best judge. It is not quite easy to see what Dr. Toye means when he writes, "The duty of the medical man would simply be that of signing a certificate in all cases of death, whether due to natural or violent causes." The question must still arise whether the medical man attended the deceased during his last illness within the meaning of the section. Dr. Toye's quotation is from the Subsection 2 of Section 20. Subsection 3 is as follows: "Where an inquest is held on the body of any deceased person a medical certificate of the cause of death need not be given to the registrar, but the certificate of the finding of the jury furnished by the coroner shall be sufficient." The section ends as follows: "If any person to whom a medical certificate is given by a registered medical practitioner in pursuance of this section fails to deliver that certificate to the registrar he shall be liable to a penalty not exceeding forty shillings," so that apparently Subsection 3 is intended to apply so as to exempt the medical man from giving a certificate in the class of case referred to, and not to excuse the person to whom it has once been given from passing it on. In conclusion, it may be pointed out that the withholding of a certificate of the cause of death by a medical man in cases where he has attended during a last illness is usually due to some element of doubt, the elucidation of which is outside his functions and beyond his powers.

Workmen's Compensation: Hughes v. Glover, Clayton, and Co.

The widening of the meaning of the word "accident" in order that compensation may be granted by employers to the dependents of deceased workmen has been a noteworthy feature in recent decisions under the Workmen's Compensation Act, 1906. In the latest case, Hughes *v.* Glover, Clayton, and Co., decided by the Court of Appeal, the workman, who was employed by a firm of shipbuilders, was engaged in tightening a nut with a spanner, when a companion saw his foot slip forward and then saw him fall on his back. He was found to be dead, and post-mortem examination showed that a very large aneurysm of the aorta had ruptured, the medical evidence being to the effect that in the condition in which it had been this result might have taken place from very slight exertion or might even have occurred during sleep. It was not proved that the slip of the foot mentioned was in any way responsible for the death, and the finding of the county court judge and the judgment of the Court of Appeal were based upon the assumption that, in fact, the man had suffered from aneurysm and that the exertion of using the spanner in the ordinary course of his work had brought about the death which might have ensued at any time upon any other not extraordinary cause. The county court judge held, however, that on the authority of cases already decided the death under consideration was due to an accident and the Court of Appeal upheld this decision. The case upon which stress was laid in the judgment delivered by the Master of the Rolls was that in which a workman in a weak state of health was allowed to try to work his way home in the stokehold of an Atlantic liner, where he succumbed to heat stroke and died while performing the ordinary duties of a stoker. The Master of the Rolls cited the following passage from the judgment then delivered by Lord Loreburn, who said: "To my mind the weakness of the deceased which predisposed him to this form of attack is immaterial. The fact that a man who has died from a heat stroke was by physical debility more likely than others so to suffer can have nothing to do with the question whether what befel him is to be regarded as an accident or not. ..... It was an unlooked-for mishap in course of his employment. In common language, it was a case of accidental death." Another case cited was that of Stewart *v.* Wilson's and Clyde Coal Company (5F. 120) in which Lord Maclaren said: "If a workman in the reasonable performance of his duties sustains a physiological injury as the result of the work he is engaged in, this is an accidental injury in the sense of the statute." The Master of the Rolls concluded his judgment by saying: "In the present case the workman, in the reasonable and ordinary discharge of his duties, had sustained an injury, a rupture of the aorta. That injury was the result of the work in which he was engaged and the appeal must therefore be dismissed with costs." Possibly

this most recent decision, like others, will not be considered to be fully established until it has been submitted to the House of Lords, but the Court of Appeal has apparently followed the precedents laid down in cases already decided by that tribunal. It may be questioned whether Lord Loreburn's opinion was that the case upon which he was delivering judgment was "in common language a case of accidental death." It will seem to many a straining of "common language" to make "accident" include the natural result of any kind of work deliberately undertaken by a person physically unfit to engage in it. Such, however, is the legal interpretation of the word as used in an Act of Parliament which imposes a liability upon practically all employers, and the cases referred to point to the desirable precaution on the part of employers of making all those in their service submit to physical examination before engagement and periodically afterwards. Workmen whose soundness is in any degree open to question are likely to find themselves in the ranks of the unemployed, and the imposing of medical examination upon workmen may bring some employers into collision with trades unions, but these are questions which we need not discuss here. The medical man, who presumably is acquainted to some extent with the physical weaknesses of his coachman, chauffeur, gardener, or other servant of either sex, will do well to note the liability imposed upon him by the law, and will remember that he cannot contract himself out of it.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 7472 births and 3311 deaths were registered during the week ending August 7th. The annual rate of mortality in these towns, which had declined in the eight preceding weeks from 12·6 to 10·6, further declined last week to 10·5, a lower rate than in any previous week of this year. During the first five weeks of the current quarter the annual death-rate in these towns averaged only 11·0 per 1000, and in London during the same period it did not exceed 10·6. The lowest recorded annual death-rates last week in the 76 towns were 3·8 in East Ham, 5·3 in Walthamstow, 5·7 in King's Norton, and 5·8 in Bournemouth and in Barrow-in-Furness; the rates in the other towns ranged upwards, however, to 15·0 in Bootle, 15·1 in Liverpool, 16·6 in Great Yarmouth, and 18·0 in Newport (Mon.). In London the recorded death-rate last week did not exceed 10·1 per 1000. The 3311 deaths from all causes in the 76 towns last week showed a decline of 86 from the low number returned in the previous week, and included 336 which were referred to the principal epidemic diseases, against 313 and 315 in the two preceding weeks; of these, 127 resulted from diarrhœa, 83 from measles, 52 from whooping-cough, 34 from diphtheria, 28 from scarlet fever, and 12 from "fever" (principally enteric), but not one from small-pox. The 336 deaths from these epidemic diseases last week were equal to an annual rate of 1·1 per 1000, against 1·0 in each of the three preceding weeks. No death from any of these epidemic diseases was registered last week in Croydon, Tottenham, Stockport, Hornsey, Rochdale, York, or in 11 other smaller towns; the annual death-rates therefrom ranged upwards, however, to 2·7 in Rhondda, 2·9 in Wigan, 3·0 in Middlesbrough, 4·7 in Newport (Mon.), and 5·2 in West Bromwich. The deaths attributed to diarrhœa in the 76 towns, which had increased in the five preceding weeks from 59 to 113, further rose to 127 in the week under notice, and was relatively most fatal in Swansea, Wigan, and Nottingham. The fatal cases of measles, which had steadily declined in the four preceding weeks from 138 to 80, were 83 last week, and caused annual death-rates equal to 1·3 in Coventry and in Salford, 1·5 in Bootle, 4·0 in Newport (Mon.), and 4·4 in West Bromwich. The 52 deaths from whooping-cough exceeded by four the number in the previous week, causing annual rates equal to 1·0 in Middlesbrough and 1·2 in Wigan. The 34 fatal cases of diphtheria showed a decline; they included four in Birmingham and Smethwick, four in Manchester and Salford, three in Liverpool, and two each in Portsmouth, Bristol, Leeds, Middlesbrough, and Cardiff. Of the 28 deaths from scarlet fever, four occurred in Manchester and Salford, three in Rhondda, and two both in Gateshead and in Cardiff. The deaths referred to "fever," which had been 22, 11, and eight in the three preceding weeks, were 12 last week, including two in Salford. The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and in the London Fever Hospitals, which had been 2737, 2731, and 2667 on the three preceding Saturdays, had further declined to 2564 at the end of last week; 280 new cases of this disease were admitted to these hospitals during last week, against 415, 367, and 296 in the three preceding weeks. The registered deaths in London last week referred to pneumonia and other diseases of the respiratory organs, which had been 132 and 106 in the two previous weeks, rose again last week to 120, but were two below the corrected average number in the corresponding week of the five years 1904–08. Only one death in London last week was directly referred to influenza. The causes of 31, or 0·9 per cent., of the deaths registered in the 76 towns last week were not certified either by a registered medical practitioner or by a coroner. The causes of all the deaths registered last week were again duly certified in Bristol, West Ham, Bradford, Newcastle-on-Tyne, Nottingham, Salford, Portsmouth, and in 53 smaller towns; the 31 uncertified causes of death in the 76 towns included nine in Liverpool, six in Birmingham, and two both in St. Helens and in Sheffield.

HEALTH OF SCOTCH TOWNS.

In eight of the principal Scotch towns 874 births and 429 deaths were registered during the week ending August 7th. The annual rate of mortality in these towns, which had declined in the seven preceding weeks from 15·5 to 11·8, was last week equal to 11·9. During the first five weeks of the current quarter the death-rate in these Scotch towns averaged 12·3 per 1000; in the 76 large English towns the mean death-rate during the same period did not exceed 11·0. The death-rate last week in these Scotch towns ranged from 9·8 and 9·9 in Aberdeen and Perth, to 13·2 in Dundee and 14·4 in Greenock. The 429 deaths in the eight towns last week exceeded by six the low number in the previous week, and included 50 which were referred to the principal epidemic diseases, against 45 and 39 in the two preceding weeks. These 50 deaths were equal to an annual rate of 1·4 per 1000, against 1·3 and 1·1 in the two preceding weeks; the rate last week from the same epidemic diseases in the 76 large English towns was equal to 1·1 per 1000. Of the 50 deaths last week in the eight Scotch towns from these epidemic diseases, 20 resulted from diarrhœa, 14 from whooping-cough, six from measles, four from "fever," and three both from scarlet fever and diphtheria, but not one from small-pox. The deaths attributed to diarrhœa, which had been 14 and 13 in the two preceding weeks, rose last week to 20, of which seven occurred in Glasgow, four in Edinburgh and in Dundee, and two each in Paisley and Greenock. The 14 fatal cases of whooping-cough were within one of the number in the previous week, and included five both in Glasgow and in Edinburgh. Of the six deaths from measles, against 14 and three in the two preceding weeks, three were returned in Glasgow and two in Aberdeen. The four deaths referred to "fever" slightly exceeded the numbers in recent weeks, three being certified as enteric, and one (in Aberdeen) as cerebro-spinal meningitis. Two of the three deaths, both of scarlet fever and diphtheria, were returned in Glasgow. The deaths referred to diseases of the respiratory organs in the eight towns, which had been 76, 49, and 43 in the three preceding weeks, rose again to 51 in the week under notice, but were three below the number returned in the corresponding week of last year. The deaths in the eight towns last week included 17 which were referred to different forms of violence, of which 10 occurred in Glasgow. The causes of 11, or 2·6 per cent., of the deaths in the eight towns last week were not certified; in the 76 English towns the proportion of uncertified causes of death last week did not exceed 0·9 per cent.

HEALTH OF DUBLIN.

The annual rate of mortality in Dublin, which had been equal to 14·4 and 17·4 per 1000 in the two preceding weeks, declined again to 15·2 in the week ending August 7th. During the first five weeks of the current

quarter the death-rate in the city averaged 15·9 per 1000, whereas the mean rate during the same period did not exceed 10·6 in London and 12·8 in Edinburgh. The deaths of Dublin residents from all causes last week showed a decline of 17 from the number in the previous week, and included 12 which were referred to the principal epidemic diseases, against nine and 15 in the two preceding weeks. These 12 deaths were equal to an annual rate of 1·6 per 1000, the death-rate from the same epidemic diseases last week being equal to 0·9 in London and to 1·9 in Edinburgh. Of the 12 deaths from these epidemic diseases in Dublin last week, five resulted from diarrhœa, four from whooping-cough, and one each from measles, diphtheria, and "fever," but not one either from scarlet fever or small-pox. The fatal cases both of diarrhœa and whooping-cough corresponded with the numbers in the previous week. The 116 deaths at all ages included 25 of infants under one year of age, and 29 of persons aged upwards of 60 years. Five inquest cases and five deaths from violence were registered during the week; and 40, or 34·5 per cent., of the deaths occurred in public institutions. The causes of four, or 3·4 per cent., of the deaths registered in the city last week were not certified either by a registered medical practitioner or by a coroner; in London the causes of all but one of the 933 deaths registered were duly certified, and in Edinburgh all the causes of death were certified.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

IN accordance with the provisions of Her late Majesty's Order in Council of April 1st, 1881, Staff-Surgeon Edward Francis Power has been placed on the retired list (dated July 28th, 1909).

The following appointments are notified:—Fleet-Surgeons: F. J. A. Dalton to the *New Zealand*, on recommissioning; and G. Ley to the *Juno*, on recommissioning. Staff-Surgeons: W. G. Westcott to the *Excellent*, additional, for the *Revenge;* R. H. Mornemont to the *Eclipse*, on recommissioning; L. Lindop to the *New Zealand;* C. R. Sheward to the *Majestic*, on recommissioning; and J. Whelan to the *Adventure*, on recommissioning. Surgeon: S. N. Scott to be surgeon and agent for duty with civilian workmen at Turnchapel and Oreston injured while on duty.

ROYAL ARMY MEDICAL CORPS.

The undermentioned Lieutenants to be Captains (dated July 30th, 1909):—Charles M. Drew, Archibald A. Sutcliff, Arthur G. Cummins, Hugh E. Gotelee, Archibald S. Littlejohns, William R. Galwey, Frank A. McCammon, George De la Cour, William Egan, Robert G. H. Tate, Alexander Dawson, Frank Forrest, Augustus S. Williams, Victor C. Honeybourne, Clive T. Edmunds, Valentine G. Johnson, Charles R. M. Morris, Richard E. U. Newman, Ernest W. M. Paine, Frederick D. G. Howell, William H. Gillatt, Patrick Sampson, Marcus G. Dill, John B. G. Mulligan, Edward M. O'Neill, Georgie B. Edwards, John W. L. Scott, William C. Smales, Arthur H. Bond, Thomas C. C. Leslie, Donald De C. O'Grady, Lawrence G. Gibson, Philip S. Stewart, and Timothy W. O. Sexton. The undermentioned Lieutenants are confirmed in that rank: Spencer G. Walker, James A. Clark, Harold H. Leeson, William G. Wright, Albert T. J. McCreery, Harry S. Ranken, John A. Manifold, Samuel S. Dykes, Robert C. Priest, Percy S. Tomlinson, Alexander D. Stirling, George P. Taylor, Robert C. Paris, Alfred W. Bevis, Ernest C. Lambkin, Oswald W. McSheehy, Maurice J. Williamson, Charles L. Franklin, Michael White, James J. D. Roche, James R. Hill, Herbert F. Joynt, Alexander S. M. Winder, James R. Yourell, Philip G. M. Elvery, John Beckton, and William B. Rennie.

INDIAN MEDICAL SERVICE.

Major F. D. Browne, has been appointed to the substantive medical charge of the 112th Infantry at Kohat. Captain A. S. M. Peebles has been appointed to the substantive medical charge of the 18th Lancers, vice Captain R. F. Baird. Lieutenant N. J. Simpson has been appointed to officiate in medical charge of the 2nd–9th Gurkha Rifles. Lieutenant J. B. Lapsley has been appointed to the 3rd Brahmans, and also to hold medical charge of the Cantonment Hospital, Agra.

TERRITORIAL FORCE.

Royal Army Medical Corps.

1st South Western Mounted Brigade Field Ambulance: Major George R. Swinhoe resigns his commission (dated May 13th, 1909).

For attachment to Units other than Medical Units.—Arthur Herbert Norris to be Lieutenant (dated June 22nd, 1909).

THE TERRITORIAL CAMPS.

The *Times* military correspondent, referring to the field operations in the New Forest, says that the physique of the men is excellent. The Salisbury correspondent, in referring to the death of a trooper belonging to the City of London Yeomanry, states that the death was quite independent of camp life. "The sanitation of the camps is perfect, and the cooking of the food could not be better in a restaurant working upon a similar scale." He, however, points out that "an aggravation of ..... heat trouble in many instances was the lack of drinking water. Many of the men had emptied their water-bottles long before the morning's operations were over, and no water was to be found at any distance from the camp." The selection of water-supplies for a camp was discussed in the second instalment of the articles on the Territorial Medical Service which appeared in the last issue of THE LANCET, p. 416, and stress was laid upon "quantity."

THE ROYAL VICTORIAN ORDER.

In connexion with the recent visit of the Emperor and Empress of Russia to this country the King has appointed Staff-Surgeon John Smirnoff and Staff-Surgeon Serge Lentovsky, honorary surgeons to His Imperial Majesty, to be Honorary Members of the Fourth Class of the Royal Victorian Order.

THE RED CROSS SOCIETY.

Sir Frederick Treves, referring at a meeting of the British Red Cross Society at Horsham on August 10th to the memorandum which the War Office was about to issue calling upon the Red Cross Society to take the place it ought to take in connexion with the defence of the country, said that the document would be published in the course of two or three days.

Correspondence.

"Audi alteram partem."

THE NATURE OF ANGINA PECTORIS.

To the Editor of THE LANCET.

SIR,—I trust you will allow me a little space, as I could not be at the Belfast meeting, to express my dissent from the views advocated by Sir Clifford Allbutt referred to in your abstract of his paper at pp. 336–7 of your last number in July.

Sir Clifford Allbutt's positive assertion I do not dispute. I quite agree that stretching of the supra-sigmoid portion of the diseased aorta will account for anginal symptoms in a certain number of cases—which are recognisable by fairly definite symptoms,—but whilst Sir Clifford Allbutt has earned the gratitude of clinicians by having so carefully pointed out this mechanism, he must not expect them to accept without challenge his view that aortic stretching is the only mechanism of anginal suffering. The mechanism of angina consists of one or other of at least three or four combinations, and the modes of death, too, are several. The terms angina major and angina minor adopted by Sir Clifford Allbutt imply degrees of the same thing, and as he seems to regard angina as a disease by itself and not a symptom or a syndrome, the terms appear to me to be only justifiable on the view that it also has only one pathology. In this view I cannot acquiesce.

Clinically, as one meets with cases, I would emphatically maintain that the radiating reflection of the pains to one or both arms, to the throat and shoulder, is by no means peculiar to cases of the graver kind of angina, although it may be more frequent in them. I have seen the most acute anginal suffering, with central agony and reflected pains, in

cases of purely vaso-motor angina, in cases in which there is no discoverable cardio-vascular disease, and in which time has demonstrated the absence of such.

I need scarcely say that I do not regard vaso-motor spasm as contributory to all forms of angina. But what is understood by pseudo-angina cannot be dismissed in the light-hearted manner of the professor, for the vaso-motor phenomena are in many cases of the very essence of the picture. In certain cases of organic heart disease with anginal attacks, any of which may be fatal, the acute anginal attack is started and maintained by the vaso-motor spasm and is relieved by the relief of that spasm. I have recorded in Sir Clifford Allbutt's "Cyclopædia of Medicine" a case of the most severe anginal suffering in aortic regurgitant disease I ever witnessed, in which the mechanism and the relief were obviously of this kind. I have witnessed other cases, not only of aortic regurgitant but of textural heart disease, in which the mechanism of the attack was the same, and I have seen others again—which alone I would regard as cases of pseudo-angina, although I do not like the term—in which there is angina of vaso-motor origin, which may be even severe, but in which the heart—the criterion in prognosis—is sound.

The "pretty fancy" of intermittent claudication, to which Sir Clifford Allbutt playfully alludes, seems to me to be based upon very sound observation and analogy by Burns, Brodie, and Charcot, and to have been supported by some recent very interesting observations by Dr. Parkes Weber on analogous conditions in the legs of excessive smokers. But I have already made this letter too long, and for a full explanation of the views which, from reading and experience, seem to me to be most tenable respecting this grave and interesting malady, I must refer the reader to my revised article in the coming volume of Sir Clifford Allbutt's "Cyclopædia of Medicine."

I am, Sir, yours faithfully,

London, August 9th, 1909. R. DOUGLAS POWELL.

AN OPERATION FOR THE TOTAL EXCISION OF TONSILS.

To the Editor of THE LANCET.

SIR,—I was about to publish the results of 300 cases of tonsillectomy as practised by me since 1907, when I read the article by Mr. G. E. Waugh in THE LANCET of May 8th, 1909, and I hasten to publish my results and the method of my operation. There is practically very little difference in the technique adopted by Mr. Waugh and myself. Mr. Waugh does not say from what year he has been practising the method he advocates in the article referred to above. As regards the number of tonsillectomies performed by him up to the date of his publication I must admit that he has done three times as many as I have. But considering the population in London and the climatic conditions favourable for throat affections prevailing there, I do not consider that the number of cases operated on by me, mostly in Bangalore with a population of two lakhs or so, compares unfavourably.

The operation hitherto practised in Europe, so far as I am aware, has been the removal of enlarged tonsils by the guillotine. The cases suitable for guillotine are large tonsils causing difficulty in swallowing and breathing. Such cases were placed on the dental chair and under the influence of nitrous oxide gas the tonsils were guillotined within a minute or two. I have also seen such enlarged tonsils guillotined without any general or local anæsthesia, much to the suffering of the unfortunate patients. This was done at the London Hospital out-patient department by a young and energetic clinical assistant who is no longer there. I refrain from mentioning his name, but when his chief asked him if he would do an operation like that on his own son he gave up this practice, at any rate at the hospital.

Of the cases operated on by the guillotine I have seen several in which the whole tonsil was removed satisfactorily without a vestige of its structure being left behind, but the cases in which a part of the tonsil was left behind after this operation had been many. As these cases were mostly out-patients, I had not the opportunity of following their after-history, and therefore I am not in a position to say how far the tonsillectomy with the guillotine method has proved successful.

But since returning to India I have made a close study of my earlier cases operated on by the guillotine method, and to my great disappointment I found that the guillotine was not efficient in the great majority of my cases. In such cases the tonsils, though diseased and septic, giving rise to frequent tonsillitis and pharyngitis and otherwise interfering with the general health of the patients, were not large enough for the application of the guillotine. Besides, the Victoria Hospital, Bangalore, is not provided with a dental chair, and the facility for the administration of nitrous oxide gas is not very great in India. All operations which are not amenable to local anæsthesia or to spinal analgesia have to be performed under chloroform. My earlier cases operated on by the guillotine under chloroform in Colombo and in Bangalore failed to give me any satisfaction. I had to draw the tonsils out with a small pair of vulsellum forceps after adjusting the guillotine and in most cases only a small fragment was thus removed. It appeared to me that the game was not worth the candle. Sometimes the guillotines failed to work, being very blunt, and owing to the want of facility to get them sharpened they had to be sent to London to the manufacturers. This entailed long delay. Under these circumstances it occurred to me that a much simpler operation could be performed without the guillotine and with much better results. Since then I have performed about 300 cases in private as well as at the hospital after the method advocated by Mr. Waugh with slight modification, though I was completely unaware of his method until I read of it in THE LANCET.

The methods I adopt for the removal of tonsils vary with their size and with their association with adenoids or not. In the case of large tonsils in adults I still employ the guillotine under local anæsthesia. The tonsils are swabbed over with a solution of cocaine (10 per cent.) and injected through a hypodermic syringe with a syringeful of either cocaine or novocaine with adrenalin at several points. The solution usually employed for injection is novocaine or cocaine grs. 10, adrenalin ℥i, aqua dest. ad ℥i. Within ten minutes the patient is ready and the tonsils are removed with the guillotine almost entire. Sometimes I use the vulsellum forceps to draw the tonsils out of their bed to engage in the grip of the guillotine. Where the tonsils are not much enlarged though diseased, instead of the guillotine I employ a pair of vulsellum forceps and a pair of curved blunt-pointed scissors for their removal; the mouth, of course, is kept open by a gag and the patient is seated on a chair. But in the case of children with diseased and enlarged tonsils who are also invariably subject to adenoids, local anæsthesia is not to be recommended for two reasons. In the first place adenoid growths cannot be successfully anæsthetised by such local measures as swabbing or spraying with solutions such as cocaine or novocaine and adrenalin without much discomfort to the patient, as the growth is situated in the naso-pharynx. Any attempt at such a procedure will lead to much retching and vomiting and to great waste of time when one has several cases to get through. Even if local anæsthesia is complete, the sight of instruments is quite enough in the case of children to produce such a fright as to prevent one from performing the operation. Therefore in the case of children I always employ general anæsthesia and choloroform is the anæsthetic used invariably in India and Ceylon. In operations on the throat and nose the anæsthetic is not pushed to the same extent as required for operations on other parts of the body. Anæsthesia is not necessarily complete. Having partially anæsthetised the patient, the head is allowed to hang well over the edge of the table. The mouth is opened by a gag and the tongue is drawn well forward by a stout silk thread passed through the tip of the tongue. The operator stands behind the head of the patient and draws the tonsil out with a pair of small vulsellum forceps. One disadvantage with the vulsellum is that the diseased tonsillar tissue is likely to give way when pulled out, as it is very friable. A conchotome appears to be preferable, but I have had no experience. I do not use any fine-toothed forceps to mark out the preliminary incision. I think it is quite unnecessary and can be easily left out. Besides, it is not absolutely necessary to define the capsule before the removal of the tonsil. If any pieces are left behind they can be felt by the finger and removed by the scissors or by the punch forceps. Pulling the tonsils by the vulsellum towards the middle

line, I begin by detaching the anterior pillar from the underlying tonsil with a blunt-pointed curved scissors, and the whole tonsil is removed. In some cases a piece of tonsil extends down the wall of the pharynx and its removal is easily facilitated by this method, whereas by the guillotine it is not at all possible.

One drawback to this method of removing the tonsils is the hæmorrhage which follows in some cases. It often struck me that the amount of hæmorrhage was out of proportion to the quantity of tonsillar tissue removed. But with the head well hanging over the edge of the table and with the mouth wide open, the hæmorrhage is easily controlled with hot sponges on holders and there is hardly any risk of blood entering the larynx. I have so far never met with any casualty. In Mr. Waugh's experience there has been "practically no bleeding," and he accounts for this by the complete anæsthesia employed for his cases to abolish the laryngeal reflex. He states "the absence of bleeding forms a striking contrast to the sharp hæmorrhage which ensues after the tonsil has been cut across by a guillotine." But my experience has been otherwise. In some cases in which the anæsthetist had accidentally produced complete narcosis I still noticed a fair amount of hæmorrhage. I think the position of the head hanging well over the edge of the table is responsible for the bleeding, as it tends to engorge not only the pharyngeal plexus of veins but also all the blood-vessels of the head and neck. With this exception this position gives one a much better view of the field of operation as the light is not obstructed; there is much less chance for the blood to be sucked into the air passages. Hæmorrhage must necessarily follow any cutting operation of a vascular organ like the tonsil which has five vessels of supply, but in this position it is more efficiently controlled, and the operator is not cramped for want of sufficient space for manipulation. Any of these advantages must be limited with the position recommended by Mr. Waugh. In any case hæmorrhage never lasts for any length of time. It is soon over.

With regard to the after-history, I have so far had no casualty and no trouble with sepsis, except in one case in which one of the submaxillary lymphatic glands suppurated and required an incision. This was in the case of a Brahmin girl very much run down, who was not seen by me after the operation until after the abscess had formed.

The after-treatment consists in swabbing the wounds frequently with a solution of cocaine grs. 10, acid. carbolic. ♏ 10, glycerine and water ää ʒss. The swabbing is done before and after a meal especially. A gargle of a dessertspoonful of Sanitas in a tumbler of tepid water is also prescribed. I never had any occasion to prescribe anything internally. The temperature on the first day has never gone above 100° F. The patient is confined to bed for 48 hours and fed on slops; solid food is allowed as soon as he is able to take it. Within a week the wounds heal up, while I have never had any occasion to send my patients to the dentist before the operation as the teeth of the people in this part of the world are sound.

As regards adenoids, I find simple curetting is not satisfactory. For median growth curetting is no doubt sufficient, but one finds frequently adenoid growths on the sides and below the entrance to the Eustachian tubes. Such growths cannot be tackled by the curette, and the attempt may be productive of harm. The adenoid punch forceps are best suited for such cases and they can be easily worked with one finger in the naso-pharynx as a guide.

I am, Sir, yours faithfully,

H. B. MYLVAGANAM, F.R.C.S. Eng.,
Surgeon to Victoria Hospital, Bangalore.

Bangalore, June 16th, 1909.

MERCURIAL INUNCTION IN EARLY TABES

To the Editor of THE LANCET.

SIR,—During the past year I have had under my care a number of cases of early tabes, whom I have treated by submitting them to a prolonged course of intensive mercurial inunction, together with sulphur waters used internally, exactly in accordance with the methods followed at Aachen. The patients experienced but slight inconvenience and were in most cases able to attend to their ordinary duties. I have been impressed with the excellent results obtained. In many of the cases the drug had previously been taken by the mouth for long periods, with but little, if any, benefit. Not only, it appears to me, is this method much neglected in this country but the technique would seem to be imperfectly known. It may be added that the Wassermann test frequently confirms the necessity for treatment, as well as affording objective evidence of its effect, and this before improvement is manifested subjectively. I append very brief notes of two typical cases.

CASE 1.—A man, aged 50 years, acquired lues 30 years ago; mercurial pills taken for two years. For the past six years has had lightning pains, girdle feeling, Argyll-Robertson pupils, and exaggerated knee-jerks. During this period has taken several courses of mercury by the mouth without benefit. The Wassermann reaction was positive. After a course of 100 inunctions the serum test became negative and three months afterwards the sensory discomfort had almost disappeared. His appearance improved marvellously, and while gaining in weight his activity greatly increased.

CASE 2.—A man, aged 60 years. Acquired lues 40 years ago, and was carefully treated. Complained of shooting pains, slight ataxia, and numbness in the lower limbs, existing for two months. The knee- and ankle-jerks were absent. At the end of a course of 60 rubbings both knee- and ankle-jerks returned, and two months after cessation of treatment he was free from discomfort, had put on a stone in weight, and felt better than he had done for years.

I am, Sir, yours faithfully,

Wimpole-street, W., August 3rd, 1909. REGINALD HAYES.

VENTILATION IN THE TROPICS.

(FROM A CORRESPONDENT.)

So much of the deterioration of the health of Europeans in the tropics is due to the defective ventilation of their dwellings that this subject demands much more attention than it has hitherto received.

The Englishman from London landing in Bombay encounters a climate the mean temperature of which (79·13° F.) is 30° higher than the one he has left, and the mean amount of moisture in the air is 1·135 pounds per 1000 cubic feet as compared with that of 0·51 pounds in London. The average human body must get rid of 284 units of surplus heat per hour in order to maintain its normal temperature of 98·4° F. with a range of half a degree, and as a hot atmosphere retards the cooling of the body, especially if it be also moist, its movement must be increased in order to produce a feeling of comfort, and the circulation should act over the whole of the body. Away from the coast, with its moist sea breezes and moderate temperature, the hot dry air and part of the light are excluded from dwellings where women and children spend their day, and from offices where men work, the circulation being impeded in some cases by wet screens and in others stimulated by fans in connexion with the screens, but no general hygienic system is observable in these methods and no measure of either light or air supply is discoverable. The air of dwellings is frequently hotter both by night and day, and much less pure, than it would be in a plantation of trees.

The ventilation of dwellings in the tropics presents features that are totally distinct from those of cold or temperate countries; this is proved by the failure of appliances, successful in Europe, that are brought out from time to time to be attached to buildings in hot countries. These inventions depend for their efficiency almost entirely on the movement of the wind, either to produce an induced current by being directed past the outlet of the ventilators or by acting on a rotating head to turn a helix which is intended to pump the air out of a building, and thus cause a renewal of the supply. The warmer the air in the building the greater the need of active ventilation, but in India the period of greatest heat is generally accompanied by a dead calm, which affords no assistance to the ventilator and renders it less efficient than a plain opening. Around the coast line, where the air is generally moist and the temperature rarely reaches 98° F. in the shade, the air within doors is warmer than the atmosphere outside owing to the absorption of the sun's heat by the building, whilst in the plains far from the influence of the

sea the hot dry air out of doors during the day is so much above the indoor temperature that it is excluded as much as possible. Buildings are also made much heavier, and many are lined with sun-dried bricks to act as an insulator against the penetration of the sun's heat. The closing of the buildings is, of course, unwholesome for the inhabitants, the richer portion of whom build large chambers to retard the fouling of the air, but as excreta escape in much greater quantity from the skin in hot countries than in temperate climates, and as the escape of surplus heat takes place chiefly by evaporation when the air is hotter than the blood, the atmosphere of a closed house is liable to become very impure and unwholesome.

The difference in the air of the plains and of the coast has already had its influence on the construction of houses, but as they are principally owned and built by natives of the country tradition has much more influence than science on the construction, and even if a European architect is employed the owner will insist on the carrying out of his own ideas, and his ideal is chiefly remarkable for the number of openings his building may possess without being ventilated. The typical bungalow is a large building under one pyramidal roof without a single ventilating opening through it. The roof extends to the verandah and is covered with tiles which become very dark with age and absorb heat freely from the sun. The heat is radiated downwards through the ceiling boards or ceiling cloth to the tenants whose ordinary protection is a swinging punkha which accelerates the passage of heat from the ceiling by a downward draught. The heat of the tiles continues to radiate downwards far into the night, although the outer air may be pleasantly cool, and the building has hardly cooled to a comfortable temperature when the sun is again upon it. For cooling the air, a hand-driven fan is used to blow it through a wet screen composed of fine fibrous roots woven into a loose mat, which reduces the air passage to 20 per cent., and as there is no means of regulating the proportion of humidity in the current it is generally too damp, and is dangerous on that account.

The writer once occupied a bungalow in Cawnpore having a terrace roof and tile-roofed verandahs around it. The walls, all shaded from direct sunlight, were whitewashed, while the roofs exposed to the sun were blackened with dead fungoid growth which caused them to heat up until it was scarcely possible to sit on the parapet wall at sunset. There was no opening for ventilation anywhere above the windows, and the building offered an excellent opportunity for experiments. A 22-inch square hole was cut in the roof of the largest room and a 10-feet chimney of the same form was fixed on the opening. It was made of the thinnest sheet iron procurable, and was unpainted. It exposed 73 square feet to the light, one half of which received the direct sun's rays. A slight dust haze filled the air at the time when the following observations were made at 2.30 P.M., the hottest period of the day: Temperature of the air in the room, 97° F.; temperature of air issuing from the shaft, 113° F.; increase of temperature in the shaft, 16° F.; velocity of current, 133·2 feet per minute; volume passed per hour, 26,553 cubic feet. The movement of air continued night and day with varying velocity according to the difference of temperature in and out of doors. Within, the air was always fresh and pleasant, and a good coat of limewash effectually reduced the absorption of heat by the roof. The chimney shaft when lying on the ground was found to acquire a temperature of 154° F., and had it been coated with a dead black it would have approached the sun temperature at the time, which was 163° F. This experiment does not seem to have been utilised anywhere else, although it offers a cheap and simple remedy against heat and stuffiness indoors.

In the same house was an office room floored with porous bricks, well pointed with good mortar. Each morning seven and a half gallons of water were poured on the floor and absorbed. This water evaporated during the day into the air of the room. The following readings were taken of the wet and dry bulb hygrometers at noon:—

	Dry bulb.	Wet bulb.	Humidity of air.
On verandah	103° F.	89° F.	56 per cent.
In office	88°	85°	87 ,,
Difference	15°	4°	31 ,,

The doors of the room were frequently open, the air was kept in movement by means of punkhas, and the office staff had excellent health.

In hot weather the difference of temperature of the air indoors and out is comparatively small, and as that difference is all there is, in the absence of wind, to produce a current, vertical openings alone are effective in India. A club in the North-West Province furnishes a good example. The billiard-room was lofty; it had clerestory windows beneath the eaves in addition to many doors and windows, but at night the heat of the lamps and the players made the room intolerable in hot weather. A smoke experiment showed that the clerestory windows were practically useless, so a 2-foot hole was cut in the middle of the terrace roof and an 8-foot light iron shaft was fixed in it with a suitable cap. The heat of the lamps produced a strong current and there was no further trouble on account of imperfect ventilation.

In Bombay there is great activity among the building trades and land has risen to an abnormal value. Houses are now built in blocks of many storeys, but although the storeys average from 12 to 14 feet in height, the air is dead for several feet above the windows, and ventilation is further restricted by sun screens descending for three or four feet from the verandah roofs. If the dwellings are in flats the chances of perflation are *nil*, and the tenant contents himself with churning the air of his rooms by the aid of electric fans or punkhas. In England a current of six inches per second can be borne with comfort at 65° F., but such a current would be useless in Bombay in May at a temperature of 89° with 75 per cent. of humidity. Under such conditions one may sit with comfort in a current of three feet per second, and the chief business of life seems to be to get rid of one's surplus heat at a sufficient rate. Indian courts of justice have long been notorious for imperfect ventilation and for the odour of unwashed humanity that pervades them. Surrounded by verandahs and corridors that swarm with pleaders, litigants, witnesses, and hangers-on, silence in court can only be obtained by closing the doors. Work of all kinds in such courts is exhausting, and it is a constant marvel that the Government should allow its highly trained officials to work in such places. A moderate structural alteration would enable these rooms to be ventilated through floor and ceiling with upward currents, allowing the doors to be closed and the noise to be excluded. Ventilation, in so far as it applies to the human being, means a supply of fresh air sufficient for respiration, for the removal of the vapours of the skin and lungs, and also of the surplus heat of the body. In the tropics the removal of surplus heat demands more air than all the rest, and a constant current of adequate velocity is necessary to ensure health and comfort. The necessary velocity of the current depends a good deal on the amount of clothing worn. This in the case of the European is nearly always excessive when indoors, for the current required to carry off his surplus heat through his body clothing is liable to cool his head too much and cause a catarrh. The same difficulty arises at night through the use of a mattress which accumulates heat on the underside of the body. A man who can sleep comfortably on a cane chair in the afternoon, dressed in light cotton clothes, finds sleep almost impossible at night with a lower temperature and still lighter clothing, but it does not occur to him to reduce his bedding until he feels the same temperature above and below. There is a further advantage with the reduced bedding, which may be at times no more than a blanket and a sheet on a canvas cot: he may sleep in a moderate draught with impunity as his body is cooled equally all round. The sense of oppression due at times to the use of a mosquito curtain is diminished or removed by a judicious reduction of bedding, for an ordinary curtain will arrest one-half of an air current that would ensure comfort to the sleeper. The chimney shaft already described is a very useful bedroom ventilator, as its current varies with the daily temperature, and although it cools a room by the circulation of air from without it cannot produce an excessive draught as might a ventilator with a constant motive force. The air-supply passed through a chamber by means of this shaft may be drawn through a wet screen like that attached to the thermantidote, but as this arrangement causes an excessive increase of moisture by lowering the dew point and also by direct evaporation, it is better, when possible, to draw the air-supply through a narrow horizontal shaft of zinc cooled on the outside with a wet jacket. This shaft may be made of cheap zinc or galvanised sheet with a section of 8 by 30 inches, and of a length proportioned to its duty. It is supported by a light exterior frame of wood and covered with the coarsest cotton cloth which is kept moist by means of a

long trough with wicks or suitable leak holes. Air drawn through this shaft is cooled without additional moisture, and it offers much less resistance to the current than a wet screen of *Kus-Kus*.

The introduction of electric current in our large cities has simplified the possibilities of good ventilation, but so far the only result has been the substitution of revolving electric overhead fans for the overhead punkhas, neither of which renews the air-supply. There is not in all India a properly ventilated public building in which the air-supply is renewed and cooled to suit the requirements of the season and the occupants. In the large hospitals many lives might be saved of patients whose condition does not permit of their removal if the air of one or two private rooms were modified to correspond in humidity and temperature with that of the nearest hill station. The cost in electrical current to reduce 5000 cubic feet per hour of the hot steamy air of Calcutta or Bombay in May to 75° F. and a humidity of 60 per cent. is not excessive nor is the necessary apparatus complicated. In official residences, and especially in public offices, a thorough system of ventilation would not only increase the efficiency of the workers but would also reduce the need for those migrations to the hills that are such an unwelcome drain on the resources of many servants of the Government. Large buildings do not need the multiplication of revolving fans that at present disfigure them. A single fan and motor placed in the highest part of the building, and connected with suitable conduits forming part of the structure, would supply an abundance of fresh air at much less cost than any of the existing arrangements.

SLAUGHTER-HOUSE LITERATURE.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

THE INFLUENCE OF LARGE TOWNS AND LARGE ARMIES ON THE ABATTOIR PROBLEM.—GREAT DEFICIENCY OF COMPETENT MEAT INSPECTORS IN ENGLAND.—WANT OF TECHNICAL KNOWLEDGE IN THE CONSTRUCTION OF ABATTOIRS.—GERMAN, BRITISH, AND FRENCH BOOKS ON THE SUBJECT.

SINCE the world-wide alarm caused by the revelations, first made in these columns, concerning the Chicago stockyards, a large number of books and official documents or Government reports bearing on similar questions have been issued. In fact, an extensive slaughter-house literature has come into being, each author endeavouring to meet the general desire for more precise information concerning the practical measures that should be enforced so as to secure a supply of really wholesome meat. Of course, there is always wholesome meat on the market; the real point is to render it quite impossible for any unwholesome meat to reach the market. When thus defined it must be confessed that perfection has not yet been attained, though undoubtedly there have been great improvements. The fact is that in many of its most important aspects new problems have grown out of modern social, economical, and political evolution. The acceleration of the means of transit has totally altered the conditions of supply, while this has been more recently still further modified by modern methods of cold storage. Then while railways and steamships have contributed to bring supplies from enormous distances, this is associated with the great increase in the size and populations of towns. At the same time small professional armies have been replaced by armed nations. The prospect of having to mobilise some millions of men in a few days has created a meat-supply and slaughter-house problem that was never contemplated in the days of small armies. In England, it is true, we have no great conscript force, and have not provided for the possibility of calling under arms within 24 hours a million or so of men and of having to feed them. This is, perhaps, one of the reasons why in England we are so much behind other nations in regard to abattoirs, and why, on the contrary, Germany, with its marvellous military organisation, has the most perfect abattoir arrangements. The same reason may explain why the State in England has done so little in regard to the inspection of meat, whereas in Germany there is not a mutton chop on the market but is strictly controlled by Government. However, we are at least accumulating a fair amount of English literature on the subject, and it is no longer absolutely indispensable to resort to foreign authors in the original, for some of the most valuable works in French and German receive early translation. We noticed in these columns recently that most important and practical German work Ostertag's "Handbook of Meat Inspection," which has now been admirably translated into English.[1] It is not a mere handbook; indeed, no one could carry so ponderous a volume in his hands for long, but it is an excellent and authoritative work.

More portable and suitable for quick reference is a work by Dr. William Robertson, medical officer of health of Leith. This is entitled "Meat and Food Inspection,"[2] and is the sort of work that can usefully be carried in the hand. Not only is it a useful guide to meat inspection, but there is a full and easy reference to the text of the various laws affecting the meat trade. On the other hand, this book contains little or no information on the great problem of the construction, the management, and the cost of large and small public abattoirs. This is, however, in the main an architectural, a sanitary engineering, and a financial problem. The technician who would be able to devise the building, the draining, and the ventilation of a public abattoir may not know anything at all about the post-mortem examination of cattle or hogs. Dr. Robertson recognises that in England we are insufficiently armed in respect to the machinery of inspection. The greater number of the existing sanitary authorities declare that they cannot afford to retain the services of a duly qualified veterinary surgeon; and, if they could, there are not a sufficient number of duly qualified veterinarians to do all the work. Consequently Dr. Robertson urges that every medical officer of health and every sanitary inspector should perfect himself in regard to meat inspection so as to fill the existing gaps. This does not seem a good suggestion, for the actual staff is rarely sufficient to accomplish fully the task which it is recognised should be taken in hand. Therefore it would be still less able to undertake such additional duties. It is quite obvious that we urgently need in England an increase of expenditure so as to train and then engage a much larger staff of meat and food inspectors than are actually on the field.

As the control of food-supply also involves extensive knowledge of sanitary engineering, of ventilation, drainage, the cleaning and the disinfection of cowsheds, stables, cattle lairs, and markets, as well as of the mechanical appliances for slaughtering, it is much more practical to concentrate all such work in the sanitary department of each local authority. That does not mean, however, that an ordinary sanitary inspector should become a meat inspector, but that a much larger number of veterinary surgeons and of specially trained assistant meat inspectors are urgently needed in this country to work in conjunction with the various sanitary authorities. In regard to the actual number of inspectors required, when describing the abattoir of Stuttgart I related that one chief veterinary surgeon and six fully qualified assistants with special knowledge of bacteriology are employed.[3] The population of Stuttgart is estimated at 260,000, or one inspector for every 37,000 inhabitants. At Manchester, when last I investigated the matter there were three veterinary surgeons and one inspector of meat. There were further one inspector and two assistant inspectors for fish and fruit, who also visited retail meat shops, and there are still some private slaughter-houses.[4] Even if we count all these inspectors, though some of them are not fully qualified and have other occupations, this only makes a staff of seven, just as at Stuttgart, but the population of Manchester is set down at 543,969, and consequently there is only one inspector for every 77,000 inhabitants. Can one individual watch over and control the meat-supply of 77,000 persons? And there are many places in England that are not as well off in this respect as Manchester. These figures will help to show the use of such a book as that written by Dr. Robertson, for it will aid in training the new inspectors we so greatly need.

"Our Slaughter-house System," by C. Cash, B.A., together

[1] Handbook of Meat Inspection, by Dr. Robert Ostertag. Review published in THE LANCET, April 11th, 1908, p. 1081.

[2] Meat and Food Inspection, by William Robertson, M.D. Glasg., D.P.H. With 40 illustrations. London: Baillière, Tindall, and Cox. Pp. 372. Price 10s. 6d. net.

[3] See THE LANCET, April 18th, 1908, p. 1177.

[4] See THE LANCET, June 27th 1908, p. 1873.

with a translation of "The German Abattoir," by Herr Hugo Heiss (London: George Bell and Sons), will assist to teach how to build abattoirs. In dealing with the Coventry private slaughter-houses I alluded to this excellent and well-illustrated work.[5] It contains descriptions and pictures of the abominable private slaughter-houses still existing in England, and notably at Coventry, together with some of the model public abattoirs of Germany. For larger and more elaborate illustrations, reference may be made to a work entitled "Public Abattoirs," by Mr. R. Stephen Ayling,[6] This book, the author states, was written to demonstrate that public abattoirs are not a luxury but an absolute necessity. They are needed, he declares, to prevent cruelty to animals and the spread of disease among men. The author also insists that they can be made self-supporting and profitable, an assertion which my German experience fully confirms. According to this work there are now 131 public slaughter-houses or abattoirs in the United Kingdom. A few of them have been well planned, others are indifferent, "and the great majority bad." There is no such thing as an abattoir system in England, though on the continent efforts to create such a system were commenced a century ago and have now reached a high degree of perfection. There still remain 318 private slaughter-houses in London entailing much cruelty to animals, with waste of valuable material, and defying systematic and reliable inspection. From these places tuberculous meat can be placed on the market with very little chance of detection. Then there are the "screw butchers" who only buy diseased and dying cattle. These animals they cart away from the farms at night and manage to slaughter and sell advantageously the unwholesome meat thus produced. Mr. Ayling also points out that the care given to the health of live cattle is inadequate, and, as a case in point, he mentions that in 1893 the British Government made an allowance of £100 for research as to the value of the tuberculin test to detect the presence of tuberculosis in cattle, while in the same year the Government of little Denmark devoted £2812 for that purpose, and this was continued for five years, when the annual allowance was raised to £5625.

The principal value of Mr. Ayling's book, as already remarked, is the practical information it contains as to the actual construction of abattoirs. The reason why such abattoirs as exist in England are for the most part defective is that their planning is generally placed in the hands of a municipal officer who has no real knowledge of this special technical question. He consequently merely imitates the defects of neighbouring abattoirs which he has been able to visit. Thus in one case we may get very good engineering and fittings with no architectural merit, and in another case considerable architectural taste and originality may only serve to cover defective principles and equipment. The matter has received very little attention at the hand of the British architects and engineers. Thus a writer on the subject is mentioned as having advocated a red-brown dado so that the splashes of blood may not be apparent instead of asking for white glazed tiles so that the blood may readily be seen and as rapidly washed off. Not only must the walls be washed constantly but the slaughtermen should be provided with comfortable lavatories where they can change their clothes, have douches or baths, and thoroughly clean themselves. Then, if it is a large abattoir, it should be provided with its own destructor and not built near the town destructor, as the dust from the town refuse will penetrate by the ventilators into the cold storage rooms and other parts of the abattoir where meat is exposed. Mr. Ayling gives plans and drawings of some of the best public abattoirs in Great Britain, notably of the Chatham Dockyards, South Shields, West Hartlepool, Leeds, Glasgow, and several other British towns. His continental experience, however, seems limited to the Paris abattoirs of La Villette and Vaugirard. These he describes very elaborately, though they are out of date and the Paris municipality is now discussing their reconstruction on better and more modern principles.[7]

A handy little publication, with numerous illustrations that help to show how abattoirs should be built, has been issued by the county borough of Belfast. A deputation was appointed by the Belfast city council last February and March to visit certain abattoirs in England and the continent. It cannot be said that the deputation selected the best towns to visit, nevertheless they saw much that was most instructive. This is how the result of the journey is pithily summarised:—"Rotterdam: An old abattoir about to pass away. Hamburg: Splendid business arrangements. Berlin: The best system of meat inspection in Europe.[8] Dresden: A new abattoir in course of construction. Cologne: A modern abattoir in course of operation. Islington: A new abattoir, spoiled for want of room." In the recommendations based on this experience for the construction of a public abattoir at Belfast the deputation have made good use of their continental experience, though it is a pity that when at Dresden they did not manage to go to Breslau to visit the magnificent abattoir, which only cost 10*s.* 6*d.* per inhabitant, and the cattle market that did not cost more than 6*s.* 6*d.* per head of the population. The receipts of this abattoir amount to £60,000 per annum, and about a third of the sum may be considered as profit. Then in Holland they should have seen the abattoir of Maestricht. Here not German but French equipment and machinery are employed. It is considered about the best abattoir in Holland, while that of Rotterdam is one of the worst. The deputation in their recommendations have shown that they still retain a lingering attachment to the old idea of partitions that separate the butchers one from the other. This is nevertheless very generally abandoned. Indeed, the only argument remaining against the slaughter-hall is the possible cruelty involved in the fact that the animals when admitted may suffer from the sight and smell of blood. This objection has been met at the small slaughter-house built by the Admiralty at the Chatham Dockyards. There would be no objection in following this example. The animals might be killed just outside the door, but only killed. The moment the animal has fallen a door should open and a pulley arrangement should drag it into the hall, and there, and only when in full view of the inspectors, should the carcass be opened and the process of dressing begun. There must be no retreating into corners or standing between partitions when this is done.

Finally, and in regard to slaughter-house literature, there are several remarkable publications issued in France on this subject. "Les Abattoirs Publics," which I quoted when describing the Paris municipal abattoir at La Villette, is a veritable monument of learning and research, not limited to France, but extending through Europe, America, and Australia. The first volume is by M. J. de Loverdo, sanitary engineer, and it has 903 pages, 404 illustrations, and deals mainly with the construction of abattoirs; while the second volume has 648 pages with 110 illustrations and treats rather the question of the inspection of animals and meat. The principal contributor to this second volume is Dr. H. Martel, chief veterinary surgeon in the service of the Paris municipality. Dr. H. Martel is likewise the principal author of the very elaborate and interesting annual reports published by the Paris Prefecture of Police on the veterinary sanitary services of the department of the Seine. Here all the details relating to the inspection of the food-supply for the capital of France and the surrounding suburbs will be found. Thus, for instance, we are told, and statistics prove, that the number of cases of tuberculosis among the cattle at the Paris cattle markets has greatly decreased. But this is not due so much to improved conditions as to the severity of the examination of the animals, so that cattle-breeders now know they are not likely to succeed in smuggling diseased animals through. No one can examine this publication without feeling that the French nation, which a hundred ago years stood first and set the best example in regard to the abattoir question, is now fully alive to the fact that the high standard has been fallen away from. But France will soon regain much of the lost ground. It is to be hoped that the time is not far distant when Great Britain will also enter into the lists and endeavour to take a worthy place in this generous competition between nations striving to control to the best advantage the food on which the people live.

[5] See THE LANCET, August 8th, 1908, p. 422.

[6] Public Abattoirs, their Planning, Design, and Equipment, by R. Stephen Ayling, F.R.I.B.A., Royal Academy Medallist, Godwin Bursar, Royal Institute of British Architects, &c. London: E. and F. N. Spon, Limited. 1908. Price 8s. 6d. net.

[7] See THE LANCET of Jan. 12th (p. 123) and 26th (p. 254), 1907, for a full description of the La Villette abattoir, with illustrations.

[8] See THE LANCET of July 14th, 1894, and Feb. 2nd, 1907, p. 317.

THE SIXTH NORTHERN CONGRESS OF MEDICINE.

(FROM OUR OWN CORRESPONDENT.)

IT was originally intended to hold the Northern Congress of Medicine at Bergen in Norway, but partly for political reasons the Norwegian President of the Congress proposed as a more suitable place the Skaw, a bathing resort of no great size in Denmark, and a considerable number of the most prominent medical men in Denmark, Finland, Norway, and Sweden accordingly met here under the presidency of Dr. KLAVS HANSSEN (Bergen).

Pulmonary Tuberculosis.

The proceedings commenced with a discussion on the Early Diagnosis of Pulmonary Tuberculosis. Professor SAUGMANN of Vejle Sanatorium in Denmark introduced the subject of the ordinary clinical diagnosis, while Dr. TILLMAN of the Oesteraasen Sanatorium in Sweden discussed the specific diagnostic methods.

Professor SAUGMANN said that the diagnosis was not merely a subtle stethoscopic one, but ought to rely on a general clinical examination. In some cases the diagnosis might be made in the absence of objective stethoscopic alterations, based only on a thorough anamnesis and a complete examination of the whole organism, special attention being paid to signs of absorption of toxins in the fluids of the body. The first objective signs were often to be found by a study of the temperature curve. A useful inference might sometimes be drawn from the so-called Penzoldt's phenomenon—namely, if the rectal temperature after a brisk walk of an hour's duration rose above 38° C. the case was suspicious. As to the stethoscopic signs, the "rough" (*rauhe*) respiration, described by Turban, was often a sound of muscular and not of pulmonary origin. Dr. Krönig had described a simple, non-tuberculous induration of the apex of the lung in chronic nasal obstruction, but this was only a healed or a very chronic form of pulmonary tuberculosis. Searching for tubercle bacilli often gave a negative result; he felt disposed to consider cases in which tubercle bacilli were found as being no longer incipient in the anatomical sense of the word. The diagnosis ought to be made before the appearance of tubercle bacilli in the sputum.

Dr. TILLMAN laid stress on the practical importance of the diagnostic subcutaneous injection of tuberculin, particularly when resulting in a local reaction. Complete absence of response to the injection of large doses (10 milligrammes) excluded tuberculosis. The patients must have been free from pyrexia or hæmoptysis for several weeks before the injection. Pregnancy and diseases of the heart or kidney were contra-indications. The tuberculin test was only to be applied when other means of diagnosis had failed. As the occurrence of râles was an important criterion of the positive reaction, the injection ought only to be made on patients without râles. The first dose was one- or two-tenths of a milligramme. If there was a positive temperature reaction an injection of pure water ought to be tried in order to control the result. The local tuberculin tests (that of von Pirquet, or the ophthalmo-reaction) were of no importance for the diagnosis of incipient pulmonary tuberculosis, as they only showed the presence of tuberculosis somewhere in the organism. The agglutination test and determination of the opsonic index have for the time being small practical value.

In the discussion Professor LAACHE (Christiania) communicated the result of some researches made by his assistant, Dr. Tillisch, showing the diagnostic importance of abolished or lessened motility of the inferior pulmonary border.

Professor ISRAEL-ROSENTHAL (Copenhagen) expressed his hesitation in adopting the subcutaneous tuberculin test as it presented a certain amount of danger in some cases.

In closing the discussion Professor SAUGMANN said that the von Pirquet test was not always reliable; he had himself suffered from acute pulmonary tuberculosis 18 years ago, and at the present time responded positively to the ophthalmo-reaction but negatively to the von Pirquet test.

Professor GRAM (Copenhagen) read a paper by Dr. ELLERMANN and Dr. ERLANDSEN on the Production of Sensitiveness to the Cutaneous Tuberculin Test of von Pirquet. Their researches showed that this test sensitised the organism in such a way that the reaction was stronger on repetition of the test than at its first application. The subsequent reaction was a little feebler than the first one in only 8 per cent. of the cases; in 8 per cent. it was unaltered; and in 84 per cent. it was stronger. If the tests were carried out on two successive days there was no difference, but after a pause of four days an increase in the reaction was distinctly observed. Sensitiveness was likewise observed after an interval of several months. This sensitiveness was not a local process, as the new test might be applied to a superficial region of the body at a distance from the region chosen in the first instance. It was only after absorption of the tuberculin that sensibilisation was observed. It was not possible to sensibilise an organism that was quite free from tuberculosis.

Dr. WÜRTZEN (Copenhagen) communicated the results obtained by himself and Dr. Kjer-Petersen in the treatment of pulmonary tuberculosis by the production of artificial pneumothorax. They had treated 27 cases in all, but the formation of adhesions between the pleural membranes prevented the establishment of a complete pneumothorax in more than seven of the cases. In three of the cases the treatment appeared beneficial, and they thought that one case of acutely developing pulmonary tuberculosis was saved by this means, as it seemed at first quite hopeless in all respects. In one case the treatment had arrested a dangerous hæmoptysis. As a rule, however, the pathological process in the other lung at last annihilated the favourable results first obtained.

Professor SAUGMANN said that he had tried the treatment for 42 patients, in ten of whom he had not succeeded in producing an effective pneumothorax. In one case the lung was kept compressed for ten months, and when the treatment was discontinued because it was found that the patient's pyrexia was not caused by pulmonary tuberculosis the lung expanded again quite well without having sustained any injury to its function. In two cases that came to post-mortem examination the pathological process was seen to be healing. On the whole, Professor Saugmann found the treatment satisfactory.

Dr. KR. THUE (Christiania) said that he thought the treatment was very efficacious in certain cases of advanced unilateral pulmonary tuberculosis. In one instance he had observed pyo-pneumothorax originating from a lung cavity as a result of the forcing of adhesions, and in two instances collapse from a pleural reflex.

Dr. VON BONSDORFF (Finland) and Dr. FIGENSCHON (Christiania) corroborated the statement of Dr. Arneth, that a considerable increase in the number of the mononuclear leucocytes accompanied the aggravation of the disease.

Functional Diagnosis of Various Diseases.

The second day of the Congress was taken up by a discussion on Functional Diagnosis. Professor SCHAUMANN (Helsingfors) discussed the importance of functional diagnosis as compared with the anatomical diagnosis fostered by the great schools of morbid anatomy in Germany and France.

Dr. SIGVARD MADSEN (Bergen) read a paper on the Functional Diagnosis of Heart Diseases. He said that this method of diagnosis was based on an examination of the pulse, respiration, and blood pressure after the patient had performed a definite quantity of work. He did not ascribe great importance to the variations in blood pressure, but relied on an examination of the pulse and respiration. After a person had taken exercise equivalent to 300 kilogramme-metres of work the pulse ought to attain its normal frequency in from one-half to three-fourths of a minute, and it ought all the time to allow of being easily counted. The respirations ought not to exceed 20 per minute and ought to go down again to the normal in half a minute.

In the discussion Dr. RUBOW (Copenhagen) laid particular stress on the examination of the alterations of the respiration. He said that in patients suffering from heart disease it was not sufficient to determine the respiratory frequency, as their dyspnœa might show itself in deeper respiratory movements, the characteristic feature being a greater inflation of the lungs than normal.

Professor P. F. HOLST (Christiania) and Professor ISRAEL-ROSENTHAL said that they were somewhat sceptical as regards the reliability of the examinations mentioned.

Dr. V. SCHEEL (Copenhagen) drew attention to the fact

first mentioned by Quincke, that while in normal persons the diuresis was greater during the day than during the night, the contrary obtained in patients suffering from heart disease as a result of the freer renal circulation in the recumbent position.

The PRESIDENT said that it was of importance to decide whether the heart was able to perform the work actually demanded of it, and that this was best done by taking a walk with the patient. He thought it was possible to judge separately of the function of the right and left sides of the heart. Insufficiency of the right side of the heart produced dyspnœa without alteration of the pulse, whereas this latter symptom was the first to appear in insufficiency of the left side of the heart.

Dr. OLAF SCHEEL (Christiania) opened a discussion on the Functional Diagnosis of Diseases of the Stomach and Intestines. In mentioning the examination of the motor function of the stomach he recommended Faber's modification of Bourget's test meal. The function of the intestines was best judged of by an examination of the fæces while the patient was on a diet of uniform composition, as, for instance, that described by Schmidt.

Dr. VERMEHREN reported a case showing how extremely cautious a surgeon has to be before considering the diagnosis of ulcer of the stomach as perfectly certain. The patient in question was a woman presenting every symptom of ulcer of the stomach. Gastro-entero-anastomosis was accordingly performed, on which occasion a stellate scar and a thickening of the anterior pyloric wall were observed during the biopsy of the stomach. Two days later she died from bronchopneumonia, and the post-mortem examination failed to reveal anything abnormal in either the stomach or duodenum. He suspected that not a few cases reported as verified by operation would on closer examination turn out to appertain to the same spurious class as that mentioned by him.

Dr. VICTOR SCHEEL (Copenhagen) opened a discussion on the Functional Diagnosis of Kidney Diseases. He said that no single test gave reliable information. The degree of albuminuria or the mutual relation between the different albumins was of little assistance, but the determination of the accommodating power of the kidneys was of greater importance. In the test originating with Dr. Kl. Hanssen and Dr. Gröndahl, the patient was given alternately a diet rich in fluids and one in which the solids preponderated; in healthy persons the urine accommodated itself to the quantity of water contained in the food, whereas this faculty decreased with increasing severity of the nephritis. The methylene-blue test was also of some value.

Dr. TALLQUIST (Helsingfors) said that in his opinion functional diagnosis was most important for the differential diagnosis of the various forms of polyuria.

Miscellaneous Communications.

The discussions were followed by a series of minor communications. Professor FABER (Copenhagen) read a paper on the Diagnostic Value of the Estimation of Pepsin in the Gastric Contents. He had used Liebmann's peptometer, and thought the method of some value for the diagnosis of gastritis.

Professor SANTESSON (Stockholm) reported on the Mortality from Pneumonia and Typhoid Fever in Cases treated with or without Alcohol. The greatest mortality was found in those treated with alcohol, but as alcohol was presumably more often given in the severe cases the statistical data did not warrant an opinion unfavourable to alcohol.

Dr. RUBOW (Copenhagen) communicated his researches on the Nature and Treatment of Dyspnœa associated with Heart Disease. He said that in severe cases of cardiac insufficiency an increased inflation of the lungs was observed. While in healthy individuals the volume of respired air was from seven to nine litres per minute, there often was in the cases mentioned a respiratory volume varying from 10 to 15 litres per minute, the result being a higher percentage of oxygen in the alveolar air, and consequently also in the blood, so that in this way the organism brought about a sort of compensation.

Professor P. F. HOLST (Christiania), in a paper on the Action of Digitalis, said that in 40 systematically examined clinical cases he had failed to observe any difference in the action whether he used old or new digitalis leaves; neither had he observed cumulative effects.

Professor AXEL HOLST (Christiania) communicated experimental investigations made by himself and Dr. Frolich on the Cause of Scurvy and Beri-beri during Sea Voyages. He was inclined to accept Nocht's theory that the latter disease, so often observed in Norwegian ships, was related to scurvy and was caused by deterioration of the food. Guinea-pigs fed on a diet tending to cause scurvy developed a disease in all important respects similar to beri-beri as met with on board ship when, besides the food mentioned, they were given small doses of antiscorbutics.

Dr. FÜRST (Christiania) said that he also had carried out experiments on the causation of scurvy and had found that while ordinary (not germinating) cereals rapidly caused scurvy, this disease failed to occur when the food consisted of germinating cereals. He therefore suggested that germinating cereals or peas should be tried as antiscorbutics in the human subject.

THE TERRITORIAL MEDICAL SERVICE.[1]

(FROM A SPECIAL CORRESPONDENT.)

III.—THE SANITARY UPKEEP OF CAMPS, &c.

BEFORE camps or bivouacs are entered upon concise orders as to the conservancy arrangements connected with latrines, urinals, disposal of refuse, sullage water, &c., must be framed by the medical officers concerned and issued in the name of the officer commanding to all units. Orders in themselves are useless unless intelligently interpreted and understood, and it must be impressed on all concerned that the fighting power of an army depends on its health, and that the general health of the army depends on the strict observance by the individuals that help to form it of the orders promulgated, more especially concerning the following: 1. Each man that uses a latrine must cover his dejecta with dry earth. 2. Each man must use the urinals provided; if found urinating within camp boundaries elsewhere, either by night or day, he should be severely punished. 3. All refuse, horse litter, and sullage to be removed from camp daily and disposed of.

Latrines.

Before occupation of a camp the medical officer with the advance party should mark off with flags the position of the latrines. The site should be to leeward and the trenches should be so planned as to lie in echelon on the outward flank on an area not likely to be flooded by storm water from higher ground, and well away from the water-supply (river, ponds, wells, &c.) and at least 100 yards from either the nearest tent, ablution place, cooking place, or slaughtery. In the case of some of the Territorial training camps which are situated near towns the dry-earth disposal system may be in force, being carried out by contract. In this, latrine seats are provided, and there should be two sets of buckets to allow of replacement of those removed nightly for emptying and cleansing. In the dry-earth system it is essential that the earth should be finely sifted (through half-inch mesh sieves) and thoroughly dried before use. When trench latrines are used the system of long deep trenches formerly employed is not to be recommended, as they are offensive and attract flies. The ground in front of the trenches from their frequent use become sodden with urine, and mud gets carried back into camp on the men's boots. If infected by a typhoid carrier with bacilluria this mud may cause an outbreak of enteric fever in the camp.

During recent years the shallow system of latrine trenches has been employed at manœuvres in some places and has given good results. The trenches are small and shallow, being 3 feet long, 1 foot broad, and not more than 2 feet deep, generally 1 foot being sufficient. The number required is approximately 5 per cent. of strength per diem—e.g., five trenches will meet the requirements of a company of infantry for one day. These trenches should be arranged in parallel rows (in echelon) with an interval of not more than 2 to 2½ feet between each trench. This distance is important, as being limited it makes the man use the trench properly and it cannot be used otherwise than in a "hunker" position, and thus a spillage of urine on the grass or soil in front of the trench is avoided. When the first trenches are filled with excreta to 6 inches from the surface they are closed in and fresh trenches may be dug in the interspaces, if space is limited, otherwise it may be

[1] Nos. I. and II. were published in THE LANCET of July 31st and August 7th.

better to use a fresh area. In digging these trenches the surface grass sods are carefully raised in sections and laid on the grass at a short distance away; the earth is then cleared out of the trench and piled in a heap either behind the trench or at its end farthest away from camp. The earth on the top of this heap is pulverised with the spade and finely sifted to have it ready for use, and a trowel or scoop (easily improvised by tin cans or pieces of board) laid on the top for each man to cover his dejecta with. If the camp or bivouac is likely to be occupied for any length of time the area for the first trenches to be used should be farther away to allow of fresh ground being taken up between those to be first used and the new ones, thus preventing men from walking over soiled ground and perhaps carrying urinary infection into the camp. In planning measurements for a trenching area for a company, allow a front of 12 feet and a depth of 24 feet for each two days; this will give sufficient room for passage to and from the trenches.

Strict sanitary instructions must be issued. Men should be ordered to put a few scoops of the dried pulverised earth on their dejecta after using the latrine. The sanitary police should patrol the area and defaulters should be severely punished. Latrine paper is to be kept in tin boxes and to prevent it blowing out of the trenches after use in windy weather a latrine screen should be set up as close as possible to the trenches, leaving, however, a space of three feet between it and those in use. In some camps a light hand rail is placed about two feet off the ground. It is not, however, necessary. The length of time shallow trench latrines may be used must depend on weather conditions and amount of ordure; generally two days, or, perhaps, four may be allowed if well covered by finely sifted earth and if the contents of the trenches which tend to get heaped up in the centre are levelled. In closing the trenches after levelling the contents the clay should be closely packed in and hammered tightly if space allows and if the contents are not liquid. After closing, litter, brushwood, or rubbish should be burned over the entire surface of the trench to sterilise any spillage. The grass sods should then be carefully replaced and the position of the covered trench marked with flags to prevent accidents to passers-by or horses. When on the march with troops company officers should detail men to dig a trench at each halt similar to that described, and before starting again it should be covered in with clay. Spades should be carried for this purpose in each company, and not in their wagons, the kits of the men carrying spades being carried in the wagons instead. When camp is reached the latrines could be dug at once without having to wait for the baggage to come up. Men should not be allowed to fall out until the latrines have been reported to company officers "as ready" and their position indicated by a distinguishing flag pointed out to the men. Outposts and men on picket duty must be made to provide themselves with latrines also. All latrines must be personally inspected daily by the officer in sanitary charge of each unit.

Urinals.

This is a much more difficult subject to deal with in camps and bivouacs from a sanitary point of view than latrines, as owing to the distance of the day urinals from camp a separate set closer by may have to be arranged for night use.

Day Urinals.—For day urinals, pits or trenches may be dug adjacent to the latrine trenches. If the soil is a sandy or absorbent one the urine soon disappears and all goes well, but if not, a urine-sodden quagmire results, which clogs the men's boots and is carried back into camp, and if infected by a typhoid carrier with bacilluria enteric fever might result. In all cases exposed urine-sodden soil must be covered at least once daily with clean dry earth to protect it from flies. Urine trenches wherever possible should, like latrine trenches, be dug to leeward in echelon on the outward flank of the camp on a site not likely to be flooded by storm water from higher ground, well away from the water-supply, and, when the ground allows it, at least 100 yards from the nearest tent, cooking place, or slaughter place. The trenches should be shallow, three or four feet deep, and the earth at the bottom well loosened. If the camp is to be occupied for a week or ten days the trenches should be from four to five feet deep, since the use of shallow trenches will only result in a larger extent of surface pollution. Urine trenches should be disinfected daily by burning in them a layer of dry litter. Tilbury-Brown made trials at manœuvres of a system of shallow urine trenches leading into pits filled with large stones. A circular pit three feet deep and two feet wide was dug, and this was filled with large stones. Two trenches six feet long and having a fall of one inch for each foot to the central pit were dug at an angle to, and running into, the central pit, the sods being carefully removed and the soil heaped up around the central pit, which was also screened off with a circular screen to prevent the men from using it. The trenches were used for about two days, and when foul they were filled in and new ones dug round the central pit like the hands of a clock. The entrance opening in the outer screen was moved round as new trenches were dug, so as to compel the men to enter only between the trenches in actual use. The results were satisfactory and preferable to the usual open pit: surrounding ground was little fouled and many men could use the trenches at the same time. Smell and flies were absent.

Night Urinals.—These are still more difficult and dangerous to deal with than day urinals in camp. They must be easy of access, only a short distance from the sleeping quarters, and easily found, their position being indicated either by a lantern, a white post, or by a path marked out with stones, preferably white, to enable the soldier to find his way thither in the dark. Firth recommends when urine tubs cannot be provided, or when the day urine pits are any distance from the men's tents, the digging of shallow urine pits near the men's lines, but says that this practice should be resorted to as rarely as possible and must be zealously safeguarded against abuse, and at all times such pits should be carefully filled in at dawn. McGill also, from service experience, recommends that night urinals should be located in the space between the perimeter and the outer line of tents on the side opposite to the cooking places, their position being indicated by a lamp or white post. In standing camps receptacles may be used (empty kerosine oil tins), being taken into use at nightfall and removed at *reveille*, when the sites on which they were placed should be cleaned and disinfected with burning litter or a strong solution of chlorinated lime. In temporary camps, where receptacles are not available, McGill recommends the digging of a few broad shallow trenches filled with 3 to 4 inches of dry litter, or better still, wood ashes, this being removed and buried after dawn and the trenches disinfected. Tilbury-Brown, in the camps at the Hampshire manœuvres, used wooden tubs for night urinals; these were placed along the streets and flanks (not in the lines) and by the side of whitewashed posts upon which lights were hung at night. In many cases stands were made for the tubs. Four tubs were placed outside the canteen. The tubs were emptied during the time they were mostly used—i.e., at 10 P.M. and *reveille*. They were not emptied into the day urinals, but into special soakage pits. During the day-time the tubs were either inverted or filled with water. During field operations small shallow urinals were dug every night, one for each half battalion, and a light was placed by each, and they were filled in each morning. The results were very satisfactory. During the South African war the subject of night urinals gave the writer considerable trouble, and he adopted the simple plan of having a 3-foot circular pit dug at each corner of the regimental bivouac with a pile of stones erected beside it for a land-mark and a line of large stones as a guide to its position from the nearest place occupied by the men; sometimes white stones (quartz) were available. The pits were sprinkled with clay each morning to keep away flies, and were filled in when fouled and fresh ones dug. In standing camps, beer barrels were obtained and sawn in half, forming tubs; these were removed in the morning, and after cleansing were treated with strong disinfectants.

Cooking places.

These should be located on the flank or the side of the camp opposite to that near the latrines and the urinals, and on no account should a cookhouse be less than 100 yards from the nearest latrine or urinal; in fact, the farther they are away the less the chance of contamination of food-supplies by flies and dust. The cooking places and their vicinity must be kept scrupulously clean, and neither kitchen refuse nor sullage water is to be thrown on the ground; the former should be collected in buckets and buried outside the camp perimeter daily. In order to separate

the grease from kitchen sullage, some authorities recommend the construction of small intercepting grease pits made with sticks, straw, grass, or heather, which can be removed daily and burnt. Special attention should be directed to the means and methods of storing food preparatory to cooking and also to the proper cleansing of the cooking utensils.

Refuse disposal.

No rubbish of any kind should be allowed to lie about in the camp or its vicinity. To collect small rubbish, pieces of orange peel, bits of paper, &c., a good plan is to have empty sacks, or barrels, or boxes with moveable lids placed at the end of each row of tents. These can be cleared out periodically and the contents *burnt* well away from camp or over the latrine or urine trenches before the surface sods are replaced, thus being utilised for sterilising purposes. Litter or refuse in general should not be buried if it is possible to destroy it by fire. In stationary camps, destructors or incinerators if fuel is available will prove a boon, but failing these a ready and effective method is to throw up a bank of earth in the shape of a horseshoe 2 or 3 feet high, and to burn the litter inside; this method has been employed in Indian frontier expeditions with success. All litter and refuse must be disposed of *daily* to obviate the attraction and breeding of flies.

The daily disposal of excreta and also of refuse constitutes one of the golden rules of camp sanitation.

(To be continued.)

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

The William Mitchell Banks Memorial Lecture.

BY invitation of the Council, Senate, and Faculty of Medicine of the University of Liverpool, Professor Harvey Cushing of the Johns Hopkins University, Baltimore, U.S.A., on August 4th delivered the fifth William Mitchell Banks memorial lecture in the surgical theatre of the Medical School of the University. There was a numerous gathering of members of the medical profession and students. Mr. K. W. Monsarrat, the dean of the Medical Faculty, presided, and introduced the lecturer in appropriate terms. Professor Harvey Cushing chose as the subject of his address "Recent Observations on the Pathology and Surgical Treatment of Intracranial Tumours." He referred in particular to the results of palliative and radical operations performed during the previous ten months on 64 cases. He detailed first the symptomatology of the affection, and drew particular attention to the alterations in the fields of vision and of colour vision as among the earliest observable phenomena. In dealing with the morbid anatomy, he went into detail regarding the experimental work which had been done to demonstrate the functions of the pituitary body, and showed how over-action was associated with the phenomena termed acromegaly, and under-action with a characteristic form of obesity and sexual infantilism. He described a case of removal of the pituitary body from an acromegalic. In the third place he demonstrated by numerous lantern illustrations the methods of operative technique which were employed in his clinic. At the close of the lecture he said that he felt more deeply than he could express in words the full obligation which that occasion had imposed upon him—an obligation not only in view of the compliment of having been asked to deliver the William Mitchell Banks memorial lecture, but also in view of his feeling of responsibility to reward his hearers in a measure for their generous attendance. He was glad to lecture under the auspices of the University of Liverpool in honour of one who, as anatomist and surgeon, was a devoted Æsculapian in Liverpool, and whose life and works were well known in the daughter country over the sea.

New Hospital at Hoylake.

On July 15th the Lord Mayor of Liverpool undertook a journey to Hoylake and West Kirby for the purpose of fulfilling two interesting official engagements. At Hoylake his lordship, who was accompanied by the Lady Mayoress, was present during the laying of the foundation-stone of the new Hoylake and West Kirby Cottage Hospital by Sir Thomas Royden, Bart., the erection of which has become necessary owing to the inadequacy of the existing hospital at Hoylake for the needs of the district. The committee, at a cost of £1000, has secured what it considered to be the best available site—a plot of ground comprising about five-sixths of an acre situated at the corner of Birkenhead-road. The hospital will be above the road level and will have accommodation for 16 beds. The building will be placed angle-wise on the site so as to give the front a full southern aspect. From the porch in the centre of the building a roomy waiting-hall will be entered, from which short corridors will give access to the male and female wings. In both these wings will be two wards, one containing six beds and one two beds, both of which are to have exits to an open verandah. Sanitary blocks, which will be fitted with appliances of the most up-to-date type, are to be introduced close to the wards, but effectually isolated by short "cut-off" corridors. Favoured fortunately by sunny weather, the ceremony of laying the foundation-stone attracted a numerous attendance. The Lord Mayor explained that the new hospital was intended to serve as a memorial of the late Queen Victoria, and remarked that there could be no more fitting reminder of one who had been so closely associated with the nursing movement. The Lord Mayor and Lady Mayoress then paid a visit to the Children's Convalescent Home at West Kirby.

The New Medical Officer of Health of Chester.

Dr. J. R. Currie has been appointed medical officer of health of the city and county borough of Chester in succession to Dr. A. E. Thomas. Dr. Currie, who is a graduate in medicine of the University of Glasgow, was for some time senior assistant physician at Belvidere Fever Hospital. In 1907 he acted temporarily as medical officer of health of the counties of Stirling and Dumbarton in the absence of the medical officer of health, and towards the close of that year he was appointed assistant medical investigator under the Royal Commission on the Poor-laws. During the past year Dr. Currie has been assistant medical officer of the city of Chester.

Liverpool School of Tropical Medicine: Appointment for Dr. Anton Breinl.

Dr. Anton Breinl, of the Liverpool School of Tropical Medicine, has been appointed to the directorship of the newly founded School of Tropical Medicine in Western Australia. For many years Dr. Breinl was first assistant to Professor Chiari in Prague. He joined the Liverpool School of Tropical Medicine in 1904, having been appointed to the Johnston International Fellowship. He shortly afterwards was despatched to Manaos as a member of the school's yellow fever expedition. He and his colleague both contracted yellow fever during their investigations into the causes of that sickness, Dr. Breinl, after a very severe illness, being invalided home to England. Dr. Breinl is chiefly known for his researches on the parasite of sleeping sickness. He and Dr. Thomas first drew the attention of the profession to the value of atoxyl in the treatment of sleeping sickness. His departure from Liverpool will be very much regretted by his colleagues at the University.

August 10th.

WALES.

(FROM OUR OWN CORRESPONDENTS.)

West Wales Sanatorium.

THE delay which occurred in the establishment of the sanatorium for the counties of Carmarthen, Cardigan, and Pembroke possibly served a good purpose, for the experience of similar institutions has proved the desirability of making a careful selection of the cases taken for treatment. During the first six months of the present year nearly all of the 20 beds in the sanatorium have been occupied, and the executive committee is considering the advisability of fulfilling their original intention of erecting the necessary buildings for the accommodation of 20 more patients. The administrative buildings are sufficient for this additional number. Of the 30 patients who have been discharged from the sanatorium during the past six months, 15 are back at the work they were engaged in before they broke down in health, eight have changed their occupation, three though able to work were not obliged to, one has died, and three are following up in their own homes the treatment which they received in the

sanatorium. The establishment of the institution met with a considerable amount of opposition, particularly from some members of the county councils, but the results more than justify the action of those who urged its necessity.

Dearth of Water in Swansea.

In October, 1907, there was completed by the Swansea corporation a large reservoir in the Cray Valley, Brecknockshire, with a storage capacity of 1,000,000,000 gallons, and it was confidently expected that the inhabitants of the town would have an ample water supply for many years to come. This anticipation received a rude shock during the last week of July when a large number of houses were placed upon a three hours' daily supply. It has transpired that the cause of this restriction was not the absence of water in the Cray reservoir, but the inadequacy of the conduits for delivering it into the service reservoirs, which themselves received independent supplies from adjacent streams. The low rainfall in the spring months had assisted in the depletion of these reservoirs. It is satisfactory to know that a second line of pipes is being rapidly laid between the Cray reservoir and the service reservoirs, and upon its completion there cannot possibly be a recurrence of the present unsatisfactory conditions.

Glamorgan Water Board.

The attempt of the Glamorgan county council to establish a water board for portions of the county, though successful before a committee of the House of Commons, has failed before the Lords Committee. The proposals of the council included, briefly, the purchase of existing water undertakings in certain districts and the supply of water in bulk to sanitary authorities who would themselves arrange for its distribution. There was opposition from those authorities who were already provided with adequate supplies and who objected to existing arrangements being interfered with. There appeared to be a strong impression, for which there was a certain amount of justification, that the scheme had been promoted in the interests mainly of the Rhondda valleys and of Pontypridd, where there is undoubtedly an inadequate water-supply. In announcing the decision of the committee that the Bill should not be allowed to proceed further the chairman, the Earl of Kintore, expressed the opinion that a comprehensive scheme of water-supply would one day be required for the county of Glamorgan. One result of the decision of the committee will no doubt be that the Pontypridd waterworks, which are situated at the head of the little Rhondda valley, will be purchased by the Rhondda and Pontypridd urban district councils. The former body already possesses extensive waterworks which are now in process of enlargement.

Lupus Patients in Swansea.

There has been placed in the hands of the Swansea Ladies' Samaritan Fund the sum of £1000, the interest of which is to be used for the purpose of providing special treatment for necessitous patients suffering from lupus. The donor of this sum is Miss Dillwyn who has for many years been a member of the Swansea board of guardians and who in 1903 was the means of providing, through an anonymous contributor, a convalescent home with accommodation for 20 patients. This institution was erected at a cost of over £10,000 on the hillside overlooking Swansea Bay. Nearly 100 patients are sent to it each year from the Swansea Hospital.

Cost of Lunatics.

The average weekly cost of lunatics in county asylums in England and Wales in 1908 was 9*s*. 9½*d*. and in borough asylums 10*s*. 11½*d*. The charge made to boards of guardians for lunatics in the Glamorgan County Asylum at Bridgend is now 9*s*. 11*d*. per head weekly. An increase of 2½*d*. per head has had to be made owing to the higher price of flour. At the Joint Counties Asylum at Carmarthen the weekly maintenance charge for the past year was 8*s*. 9*d*. per head, and the committee of the Brecon and Radnor Asylum at Talgarth have decided to raise the charge to boards of guardians from 11*s*. 6*d*. per head weekly to 12*s*. 6*d*. This increase is due in large measure to the removal of a large number of Cardiff patients who had been boarded at Talgarth during the building of the Cardiff institution. Their place will now be taken by patients belonging to Swansea, in which town a separate asylum is to be erected. The great cost entailed upon seaport towns in supporting alien lunatics was recently disclosed at Cardiff, where there are some 40 or 50 of this class of patients in the city asylum costing the corporation about £1500 yearly.

August 10th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Rickets in Glasgow Children.

AN inquiry into the physical condition of Glasgow children admitted to the City of Glasgow Fever Hospital, Belvidere, especially with a view to the incidence of rickets, has been held by Dr. A. S. M. Macgregor, assistant physician at Belvidere and has been published by the medical officer of health. The data tabulated included (*a*) the height of the children; (*b*) the size of the houses from which they came; (*c*) the position of the house in the tenement; and (*d*) the birthplace of the children and also of their parents. Of 1357 children between two and ten years of age rickets was observed among males to the extent of 31 per cent. and amongst females to 26·7 per cent. Of 329 children between six months and two years the incidence among the combined sexes was 42·5 per cent. The rachitic child was found to be of smaller stature than the non-rachitic child at all ages, and in a comparison of the mean heights made with those of the children from the one-, two-, and three-apartment houses, the male rachitic child is uniformly less in height than the non-rachitic child from the one-apartment house, the difference being more notable and amounting to 2 or 3 inches at ages from five to eight years. The female rachitic child was practically the same height (except at the age of six) as the non-rachitic child of the one-apartment house. This fact, along with the lesser incidence of rickets among females, would appear to indicate that females suffer from recognisable rickets less frequently, and show less retardation of growth, than the males. As regards housing accommodation, it is found that the same conditions that affect retardation of growth of the normal child operate powerfully on the susceptibility of the child to rickets. As regards the size of house, it appeared that among male children of the group between two and ten years of age from one-apartment houses 37·8 were rachitic, the figures for two- and three-apartment houses being 29·6 per cent. and 12·2 per cent. respectively. For females the corresponding percentages were 34·5 per cent., 26 per cent., and 8·5 per cent. The corresponding figures for the age group between six months and two years are not so striking. It was also noted that in the case of children living in houses of three apartments the number of cases was only 21. It also appeared from Dr. Macgregor's inquiry that the situation of the house in the tenement was almost negligible as a factor in the causation of rickets. An analysis of the parentage of 1277 children was undertaken with a view to determining whether the susceptibility of the child to rickets depended to any extent on its own or its parents' birthplace. It would appear that the percentage incidence of rickets among Glasgow-born children exceeded by 14·4 that among children not born in Glasgow, and by 15·5 that among children who, with their parents, are foreign to Glasgow. It was also found that the mortality among rachitic children from measles or whooping-cough between the ages of six months and two years, was 32·8 per cent., as compared with 21·1 per cent. in the case of non-rachitic children.

Death of Dr. A. R. Mackenzie, Fortrose.

The death of Dr. A. R. Mackenzie of Fortrose, which occurred very suddenly on August 4th, has removed a well-known figure in that part of the country. A native of Inverness, he graduated at the University of Glasgow and proceeded to the M.D. in 1851, when he also took the L.R.C.S. at Edinburgh, and thereafter became assistant to the late Dr. Tulloch, Fortrose, on whose death he succeeded to a practice which at that time embraced the whole of the Black Isle. Dr. Mackenzie only retired from practice a few years ago. On his attaining his jubilee as a practitioner he was entertained by the Faculty throughout the north. For many years he was an ardent Volunteer. He also held the positions of medical officer of health for the burgh and parochial medical officer for a very long period. He was a justice of the peace for

Ross and took a lively interest in the affairs of the town, serving for a number of years on the town council. He also occupied the position of chairman of the school board.

Medical Inspection in Fifeshire: Appointment of Medical Officers.

The Fife county joint committee on school medical inspection met recently and appointed four medical officers for the four districts of Fife. For the four male inspectorships there were 23 applicants, who at a previous meeting were reduced to a leet of eight, one of whom subsequently withdrew. The remaining seven appeared before the committee and were afterwards voted upon. Dr. Andrew A. McWhan, Rossville, Cambuslang; Dr. A. F. MacBean, Peterhead; Dr. A. Bremner, Montpelier Park, Edinburgh; and Dr. W. Arnott Dickson, Crosshill, Lochgelly, were appointed. It was left to the medical officer (Dr. T. F. Dewar) to assign the districts to which these gentlemen should be sent, the officer for the Cupar and St. Andrews district to reside in Cupar, for Kirkcaldy in Kirkcaldy, for West Fife and Kinross in Dunfermline, and for Leven either in Kirkcaldy or Leven.

Resignation of the Medical Officer of Health of Ceres.

At a recent meeting of the Ceres parish council notice of motion was given for the next meeting that steps should be taken to dismiss the medical officer of health of the parish, who was fined £25 and severely censured by Sheriff Armour at Cupar recently for entering the parochial shelter at Ceres in the early hours of the morning following Ceres Games and dragging some of the occupants out of bed into the street and assaulting them. The medical officer has now tendered his resignation, and the matter will be considered by the parish council at its next meeting.

Medical Inspection of Schools: Conference at Forres.

The secondary education committee of the county of Elgin was recently asked by the Education Department to formulate a scheme in connexion with the medical inspection of schools, and a conference has now been held at Forres with representatives of the secondary education committee of Nairn and with delegates from the school boards of the county of Elgin. The Forres, Elgin, and Edinkillie representatives said that their school boards did not wish to go into the scheme and were opposed to the medical inspection of schools. Nine-tenths of the children in that part of the country were healthy, and it seemed a ridiculous idea to appoint a medical inspector. After further discussion a delegate moved that they do not go in for the scheme. It was pointed out that this was irrelevant and he ultimately withdrew it. It was then moved that the medical inspection should be carried out either by the local medical practitioners or in conjunction with the county medical officer. It was also moved that the offices be not conjoined, but that an independent medical inspector be appointed, and this was eventually agreed to.

August 10th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Irish Universities Act.

BY the 20th Section of the Irish Universities Act, 1908, it is enacted that the said Act shall come into operation on such a day, not being more than two years after the passing thereof, as the Lord Lieutenant may appoint. In accordance with this section of the Act, the Lord Lieutenant, in the *Dublin Gazette* of August 6th, appointed the 1st day of October, 1909, as the date on which the Royal University of Ireland is to be dissolved, and on which the two new universities—viz., the National University of Ireland and the Queen's University of Belfast—shall come into being.

The Tuberculosis Campaign.

The Dublin city council on August 10th adopted the compulsory (notification) clauses of the 1908 Tuberculosis Act. It is hoped in Belfast that the Belfast corporation will follow this example of the metropolis. The discussion at the recent meeting showed that there was very general agreement among public health experts in favour of compulsory notification of tuberculosis. Meanwhile the war-chest of the tuberculosis campaign has been very materially enriched by Mr. Robert Collier, who has intimated to the Women's National Health Association of Ireland his intention of putting £1000 a year for five years at its disposal, in order that a tuberculosis dispensary may be founded as a memorial of his late father, Mr. P. F. Collier. The announcement of so munificent a gift for the purpose of relief of physical suffering is of special interest at a date when the Dublin corporation has just been discussing the desirability of cutting off its contributions to the upkeep of the city hospitals, with the possible exception of the grants to the Rotunda, Coombe, and Holles Street Maternity Hospitals, and the Cork Street Fever Hospital.

Holiday Home v. Sanatorium at Dalkey.

The discussion of the question of establishing a sanatorium for tuberculous patients at Dalkey has ended happily. Lady Aberdeen received a deputation from the Dalkey urban council last week, and replied to the objections which were raised in the petition which they presented against the project. In replying she expressed the opinion that their views had been formulated "under somewhat of a misconception, as there was not a definite idea of starting a sanatorium," and after some discussion on American precedents she assured her audience that they did not mean to send people in bad stages there—a concession to which Dr. W. McD. A. Wright, the medical officer of health of the Dalkey district, replied that "the only thing that would make the people of Dalkey happy would be to hear that the Irish Women's Health Association had decided not to take a place at all." Her Excellency responded to this expression of view by assuring the speaker that patients will not go there who are in any way consumptive. This reassuring promise was reiterated in a tactful little speech, and the deputation was allowed to take its leave with the full assurance that a recommendation would be conveyed to the executive of the Women's Health Association that if acquired the station would be used as a holiday home for tired workers; and, further, that in that case the institution would be managed by a joint committee on which the Women's National Health Association would invite the urban council to appoint representatives, including the medical officer of health of Dalkey.

Health of Belfast.

The report presented at the meeting of the Belfast city council on August 4th, for the period between June 20th and July 17th, showed that the death-rate from all causes was 13·6, while it was 1·2 from zymotic diseases and 4·1 from chest affections. During this period 70 cases of infectious disease have been notified—viz., 10 of enteric fever, 18 of scarlet fever, 13 of simple continued fever (probably enteric), 4 of puerperal fever, 11 of diphtheria, 13 of erysipelas, and 1 of cerebro-spinal meningitis. There were 35 deaths from zymotic disease, 58 from phthisis, 30 from pneumonia, and 36 from diseases of the respiratory organs (exclusive of pneumonia)—that is, a total of 124 from chest affections.

New Reservoir at Bangor.

On August 9th the water-supply from the new reservoir, which has been constructed at Ballysallagh, in the centre of a beautiful locality about four miles from Bangor, Co. Down, was formally turned on by the chairman of the urban council of Bangor. This new reservoir covers an area of about 30 acres and has a storage capacity of about 75,000,000 gallons, while the total catchment area is 11,000 acres. Taking the population of Bangor at 11,400 and estimating the rate of consumption as 30 gallons per head per day, this gives a water-supply sufficient for 200 days, whilst, in addition, the two reservoirs from which Bangor has up to the present drawn its supply have a storage capacity of 47,000,000 gallons.

The Water-supply of Newry.

At a meeting of the urban council of Newry held on August 9th the surveyor said that at present they were short in their daily supply of water by 200,000 gallons. A complaint was made as to the intermittent character of the supply. The matter is to be investigated.

August 10th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Electrical Stimulation of the Muscles in the Treatment of Obesity.

SPEAKING at the Academy of Sciences on July 19th M. Bergonié recommended electrical stimulation of the muscles in many of the diseases due to disorders of metabolism. The best forms of electric current for the purpose were those characterised by sudden and regular variations between 40 and 100 times per second. The electrodes were wetted with hot water; they consisted of metallic plates padded with a thick, spongy material and covered almost the whole surface of the body, excluding the face, the front of the chest, the hands, and the feet. The sittings for the application of the current might last for an hour or more without fatiguing the patient, the electrical resistance of whose body might fall below 200 ohms. Under this treatment the respirations were increased and the internal temperature showed an upward tendency. The blood pressure did not rise during this electrically induced exercise; on the contrary, it fell just as in ordinary exercise, and the weight of the fat diminished very rapidly if the food-supply remained at the point of equilibrium existing before the treatment. There was also an improvement in the patient's bodily strength and power of resistance to fatigue.

The Serum Treatment of Rheumatism.

M. Rosenthal, who has been employing the serum treatment of rheumatism in collaboration with M. Thiroloix, described the results at a meeting of the Société de l'Internat held on July 22nd. He found the serum to be not only harmless but prophylactic and curative. Clinically it had a decided effect on generalised acute articular rheumatism but none upon the infectious pseudo-rheumatisms. Its action showed itself both in the affections of the joints, in the visceral complications, in the nervous complications (cerebral rheumatism and rheumatic chorea), and in the renal complications such as albuminuria; it might also reduce the pyrexia. Although sometimes capable of bringing the disease to an abrupt termination the serum generally required to be assisted by medicines, but it appeared in that case to act on the organism somewhat after the fashion of a dyer's mordant, so that patients recovered perfectly under very small doses of pyramidon or antipyrin (in the absence of salicylate of sodium) and after very sparing applications of salicylate of methyl. There was no incompatibility between the serum and salicylate of sodium; the serum of horses immunised against the anaerobic bacterium cultivated from the patient's blood (*hémobioculture*), salicylate of sodium, and colloidal injections were the three essential methods of treating the rheumatic crisis. To prevent relapses M. Rosenthal had prepared with M. Charazin Wetzel a vaccine on Sir A. E. Wright's principle—that is to say, an emulsion of bacteria or a cultivation from freshly drawn blood in "physiological serum," and he thought that it was useful to give injections of small doses of this vaccine at long intervals in order to prevent recurrence of the attacks.

The Early Diagnosis of Calculus.

The necessity of the early diagnosis of vesical calculus was insisted on by Dr. Guépin at a meeting of the Academy of Medicine held on July 27th. He said that cases occurred in which very large uric acid calculi (weighing 100 grammes, 180 grammes, and upwards) were overlooked, and he quoted instances observed by himself both in hospital and in private practice. For the relief of such patients who had often been suffering for years it was necessary to perform the laborious operations of lithotomy or lithotrity, the results of which were not always quite satisfactory, whereas early diagnosis would have enabled the condition to be dealt with by a short operation offering a good prospect of success. Even when a vesical calculus was very large the symptoms might be very obscure, so that in all doubtful cases it was necessary to examine the bladder carefully; the best method of doing this was undoubtedly the one brought into notice by M. Reliquet, the well-known inventor of the instruments employed at the present time for crushing calculi. Proceeding in this way an operator of the requisite experience would recognise even the smallest calculi and appropriate treatment could then be undertaken.

Occlusion of the Intestine by an Intraperitoneal Band.

A case of occlusion of the intestine by an intraperitoneal band was described by M. Potherat at a meeting of the Surgical Society held on July 28th. The patient was a man, aged 21 years, who after completing his military service in Tunis returned to France, where he had an attack of malaria and afterwards suffered from lead poisoning attributable to his occupation as a plumber. He was then treated for abdominal symptoms which were regarded as due to appendicitis, and on an operation for the removal of his appendix being performed in 1907 it was found to be large and ecchymosed. In a few weeks he returned to his employment. In December, 1908, he presented symptoms of intestinal obstruction for which laparotomy was performed but no lesion was discovered. The stoppage of the bowels was relieved to some extent but afterwards became urgent and was accompanied by vomiting. Entering the Hôpital Broussais he was seen by M. Gilbert who was not disposed to accept the diagnosis of lead poisoning. After some days the fæces became dark-coloured and were blood-stained and flatus was passed with difficulty. The diagnosis of tuberculous enteritis was suggested but the examination of the fæces was negative. The symptoms of chronic obstruction at length became acute and were accompanied by fæcal vomiting; laparotomy was then performed with the result that some coils of intestine which were found to be adherent to the abdominal wall were separated without difficulty. Amid these coils there were a pouch from which serous fluid escaped, and underneath it there was a coil of intestine of an absolutely black colour with an adherent band encircling both it and the mesentery. This band had probably caused the congestion of the intestine and the subsequent hæmorrhage; the diameter of the intestine was also diminished. After division of the band the patient made an uneventful recovery.

The Reduction of Infantile Mortality in New York.

Mr. Robert Simon, who has for four months been conducting inquiries in New York with reference to the infantile mortality in that city, made a communication on the subject at a meeting of the Academy of Medicine held on July 20th. He said that during the period from 1898 to 1908 the infantile mortality in New York diminished by one-third—namely, from 214 per 1000 to 144 per 1000. This result was due in great part to the efforts of a private association for improving the condition of the lower classes and to the pressure which it exercised on the official sanitary services. Among the methods followed by the association, some of which might be found useful in France, Mr. Simon mentioned in the first place the arrangements that were made in summer time for the protection of young infants from the intensely hot atmosphere of urban dwellings by removing them and their mothers to open-air camps, seaside hospitals, and floating hospitals. These institutions were also of great service in teaching mothers the proper way of bringing up children. Another noteworthy point was the supply of milk guaranteed by a certificate issued under the supervision of the municipal laboratories. This certificate was only issued from day to day (*délivré chaque jour et révocable de même*) and required compliance with the following conditions: the milk must come from cows that have been tested with tuberculin; it must not contain more than 30,000 bacteria per cubic centimetre (in Paris there may be 5,000,000 bacteria per cubic centimetre at the end of 24 hours); it must be sent out in sealed bottles kept in ice; and it must be sold at the latest 36 hours after milking. These bottles must be filled and sealed at the farm and not in New York; they must also show the name of the farm and the day and hour of milking. Milk sold under this guarantee was, as might be expected, recommended for general use. Specially trained nurses made frequent visits to families in which there were very young infants, and they also kept regular observation upon pregnant women of the poorer class. Among infants born of poor parents and not brought under the notice of the visiting nurses until the day after birth the mortality was 17·1 per cent., but it fell to 4·7 per cent. when the mothers have received attention from the nurses for a period of a month or more previous to the termination of their pregnancy. A nurse visits 100 mothers annually and Mr. Simon considers that during that time she saves the lives of 12 children who in ordinary circumstances would have died.

August 10th.

ITALY.

(FROM OUR OWN CORRESPONDENT.)

What did the late Pope Die from?

"SENILE decay" was the accepted answer, and considering that he closed an eminently studious and strenuously active career at 94 years of age few of the contemporary world cared to inquire further. Dr. Baccelli, however, the dean of the Roman School, speaking with the authority which that position implies, has just declared the proximate cause of Leo XIII.'s death to have been tuberculosis. This disease, he maintained at a recent conference, may continue latent in the system, and then, at a given moment, "manifestarsi nel massimo vigore anche nell' età più tarda" (show itself in great force even at the most advanced age). Of this, he says, the late Pope was a typical example, succumbing as he did to "an acute attack of latent tuberculosis," when within little more than five years of being a centenarian.

The Italian Delegation at the Sixteenth International Congress of Medicine at Budapest.

At the conference above referred to Dr. Baccelli announced that he had just been honoured by Government with the task of organising a commission of delegates to represent Italy at the Sixteenth International Congress of Medicine which is to meet at Budapest on August 29th. On that commission, of which he is to be president, there will serve some Italian physicians whose studies have recently been directed to tuberculosis—a subject, moreover, to which the attention of the congressisti will be specially drawn. "There is no way of getting at the 'granulazione tubercolare'" (continued Baccelli) "through the circulation, because the 'tubercolo' bars and obstructs all special action essayed through that channel. Had it been possible by that route to attack it I would have done so when, having recourse to heroic remedies, I opened the veins. For syphilis—to say nothing of the cerebro-spinal bacteria—I have satisfied myself of the truly marvellous effects of the intravenous injection of the sublimate, by which I got 'on terms' with the 'granulazione.' Those who hold that tuberculosis is summed up in the bacillus of Koch are, I maintain, quite in error. I still adhere to the opinion formed years ago when Koch's discovery was made *publici juris*, and his 'tuberculin' was introduced into practice—namely, that the bacillus in question is only 'l'esponente microscopico dei tubercoli' (the microscopic exponent of tubercle), being by no means co-extensive with tuberculosis, still less with phthisis.

Padua: the Seat of the Italian Association for the Advancement of Science.

On the lines of its British counterpart, the third meeting of the Italian Association for the Advancement of Science will be held at the great Venetian seat of learning—the first having met at Parma in 1907 and the second at Florence. The sittings will extend from Sept. 22nd to 26th, and the programme, to which the finishing touches are now being put, will be one of exceptional interest. It is in nature-study, physics, and the medical sciences that Italy is giving most decisive proof of the resuscitation of her genius, and the organising committee of the association teems with names of distinction in all these studies—particularly the medical. I need only mention those of Golgi, Grassi, and Sanfelice to indicate the representative character of medicine. The two last named will take a prominent part under the Biological Section, while Golgi will give further illustrations of the discoveries with which he has already enriched neurology. Pigorini in palæontology and Grocco (following up last year's exposition by the Senator Colombo) will make still fresher contributions to the theme now on everybody's lips—that of aerial navigation. The opening address will be delivered by that master in academic oratory, Professor Luigi Luzzatti, who holds the chair of Constitutional Law in the University of Rome, his special thesis being the progress recently made by Italy in science and how that progress may be enhanced by reforms in her higher schools—reforms which, in Parliament and in public, he has identified with his name. I need not enlarge on the interest possessed by Padua for the English-speaking world, associated as she is with the early studies of pioneers in biology, in anatomy, and in medicine—prominent among whom stands out for all time the name of William Harvey.

August 7th.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Venomous Snakes in Austria.

IN the southern part of the empire there are several kinds of venomous snakes and the Government endeavours to prevent their increase by paying a small reward for each snake killed. In 1907 no fewer than 280,718 snakes were thus destroyed, 271,685 of them being venomous and mostly vipers. In 1908 the number fell to 273,500 snakes captured, of which 269,531 belonged to venomous kinds. In 1907 there were 206 persons bitten by these pests, with 18 fatal results. The increased knowledge of the habits of the snakes, together with the precautions that have been taken, lowered the number of persons bitten last year to 140, of whom six died. In accordance with a suggestion made by Professor Riehl, the inhabitants of the infested districts have been furnished with a small appliance, consisting of a knife for the immediate enlargement of the wound inflicted by a snake, and in the handle of this knife there is a supply of small tablets of permanganate of potassium, to be used immediately on the receipt of the wound, as it has been discovered that the venom may be destroyed by a concentrated solution of the above substance. This precaution has proved very satisfactory in the hands of the local peasantry.

Death of Professor von Vogl.

The Austrian medical profession has sustained a severe loss by the death of Professor Augustus von Vogl, Imperial councillor and emeritus professor of pharmacology and materia medica. The deceased was well known to many generations of medical men, as from 1874 to 1904 he both lectured on, and examined in, materia medica at the University of Vienna, whence the majority of the profession in this country graduate. He was the first man in Austria who obtained the M.D. degree after the introduction of the modern curriculum for medical students in 1860. His industry and wide intelligence soon raised him above the level of his contemporaries and 10 years later he became professor of pharmacology. His chief merit was the introduction of modern methods of scientific research into his branch of medicine, making use of the comparatively new sciences of histology and microscopy for investigating the nature of the officinal plants; experimental pharmacology was also first cultivated by him in this country. Many foreigners came to Vienna for the purpose of attending his lectures in 1874 onwards. On account of his important contributions to the advancement of his specialty he was awarded the Hanbury medal, together with many other foreign distinctions, and he saw his text-book on materia medica translated into almost all the civilised languages. The principal published works of Professor von Vogl are the text-book above mentioned, the "Anatomical Atlas of Pharmacological Plants," and the "Methods of Detection of Adulteration of Food." He also founded the "Codex Alimentarius Austriacus," in which the chapters on flour, mushrooms, fruit, and condiments were all his own work. Professor von Vogl was elected rector magnificus of the University of Vienna in 1888, and ten years later he was appointed Oberste Sanitätsrath, or president of the chief board of health in Austria. In this position he endeavoured to introduce the principles of modern hygiene in all cases where the Government had a right to interfere, and many useful orders and regulations with respect to the sale of articles of food and other points of public health were due to his efforts. He was highly esteemed by his colleagues. His students found in him a strict but just and kindly examiner of whom they did not stand in awe, and when, a short time before vacating his chair, he received a title from the Emperor the distinction was deemed an honour to the profession. For the last four years he lived in retirement, having reached his seventieth year in 1904.

Dental Surgeons and Dental Mechanics.

The conflict between the dental surgeons and the dental mechanics has lately assumed the character of a battle in which qualified and unqualified practitioners are struggling for supremacy and it therefore deserves the careful attention of the entire medical profession. In this country the practice of dentistry is restricted to the dental surgeons who must possess an M.D. degree and must have also passed certain dental examinations. The progress of artificial

dentistry, especially the art of crown-bridge work and regulation of the teeth, has brought into existence a large number of assistants to the dental surgeons, men without any medical degree or systematic instruction but possessing a good knowledge of the mechanical processes employed in artificial dentistry. Ever since dentistry became a lucrative occupation these men have tried to become independent of the surgeons and have encroached upon the domain of the latter until they undertook extraction of teeth, filling of cavities, and other surgical procedures without interference from the governmental authorities or medical corporations. Growing bold by degrees they have been endeavouring to have the practice of dentistry freed from the existing restrictions and thrown open to all who belong to the "guild" of dentists. The dental surgeons have naturally taken active steps in defence of their rights; and in the vicissitudes of this strife the governmental decisions have been partly for and partly against the medical men. At last a compromise was suggested by the unqualified dentists—namely, (1) that dentistry should in future be practised only by men holding the degree of M.D., and that no new dentists should be admitted to the "guild," so that this class would in course of time die out, leaving the field to the qualified men; and (2) that the dental mechanics should meanwhile be entitled to do all work necessary for the fitting of artificial teeth in the mouth. As this second condition meant nothing else but a tacit permission that surgical work might be done by men not having any hospital experience or medical diplomas the compromise was not accepted by the dental surgeons. Having obtained the help of some Members of Parliament the dental mechanics now began to demand a complete separation of the two branches of dental practice; the purely surgical one (filling of cavities and extraction of teeth) they offered to leave to the dental surgeons, whilst for themselves they asked for nothing else but the purely mechanical branch (artificial dentures, crowns, bridges, and regulation of teeth), together with permission to carry out the minor surgical procedures in the mouth necessary to fit in the dentures, such as the extraction of stumps, preparation of teeth for crowning, &c. This would mean, on the one hand, the absolute ruin of the dental surgeons and, on the other hand, the legalising of surgical practice on a special part of the human body by unqualified men. The whole profession has been roused and a meeting, arranged by all the medical corporations, has taken place in Vienna for the purpose of making a protest. All the speakers in this meeting pointed out the dangers threatening the public from the indiscriminate granting of permission to practise dentistry. As the dental mechanics have brought many influential men over to their side it is not impossible that they may be successful in their endeavours. Concerted opposition by the entire profession must therefore be organised, the public must be informed of the actual facts through the press, and there is still hope that victory may remain with the profession.

August 9th.

CHINA.

(FROM OUR OWN CORRESPONDENT.)

Shanghai Health Report for 1908.

THE carefully kept returns of Shanghai are valuable as being indicative—to a good extent as far as Europeans are concerned—of the health conditions of other treaty ports in China (i.e., ports open to foreign trade). The report just issued declares the public health during 1908 as satisfactory, with no exceptional incidence of any preventable disease. The group of bowel diseases—typhoid fever, cholera, dysentery, sprue, &c.—to which the non-Asiatic resident in the Far East is peculiarly susceptible, and which may be avoided by the use of sterilised food, have been less prevalent. The degree of prevalence of this group of maladies is perhaps the best index of sanitary education as locally acquired. Tuberculosis is still rife, and because of its commonness there is a tendency to consider it a necessary evil. Over 1000 Chinese die from this disease yearly in Shanghai, and this enormous death-rate will continue, irrespective of climate, as long as there is no legislation to prevent indiscriminate spitting and overcrowding with deficient air space. Small-pox of mild type was prevalent to a small extent during the first quarter of the year. The conscientious objector to vaccination has no troubles in China, the powers that be leaving this matter entirely to the people to take it or leave it, as they may choose. It is therefore noteworthy that during this year 4649 vaccinations have been done at the Health Office, as compared with 465, 380, 520, and 1418 of previous years, and it seems probable the Chinese will take up vaccination widely. As Dr. A. Stanley says, "small-pox should soon be looked upon as a mediæval scourge, only surviving in countries imperfectly civilised." Only two deaths were certified as due to Malta fever, and although 37 specimens were examined in the laboratory, in none was the diagnosis confirmed. A few cases of cholera were notified during the summer, but again the diagnoses were not confirmed in the laboratory. Following the dictum of "No rats, no plague" as a working basis, most energetic methods of rat destruction have been carried out, but it has been found that these measures are ineffectual in reducing the rat population—their reproduction easily keeping pace with their destruction—unless combined with active steps to make houses as rat-proof and therefore as plague-proof as possible. Solid basements, removal of stair linings, hollow ceilings, and hollow partitions, are required of house owners in the notices which are served to them. No doubt these and other similar activities on the part of the public health department have not been without good effect. At the same time the immunity of Shanghai to plague is a most remarkable fact, when one considers that, since its introduction to the Far East in 1894, plague has been epidemic in North, Mid, and South China, and until last year the only restrictions imposed by the port health authority on ships arriving in Shanghai were directed against human cases and not against rats, now recognised as the chief disseminators of plague between port and port. This problem is the more difficult to solve when one considers, again to quote Dr. Stanley, that "Shanghai is a rat-infested community, that there is no legislation whatever against overcrowding, that isolation of infectious diseases cannot be enforced, that the great mass of the population is an alien one, mostly ignorant of the rudiments of sanitation, and that there is an almost entire absence among the Chinese of the responsibilities of citizenship as understood in communities educated according to modern standards." A constant unrestricted shipping trade is kept up with Bombay, Hong-Kong, and other endemic centres; the temperature is favourable and, as noted in previous letters, plague was found to be existent among the rats, though in a small proportion; it is therefore seen that here are all the elements favourable to an outbreak. One is tempted to doubt the generally accepted theory of the rat and its fleas being the sole means of epidemic spread and to look for other causes. At Shanghai there is efficient port health examination, and up to the present no cases of human plague have been allowed to land. The spread from man to man is thus interfered with so far as pneumonic plague is concerned. Any increase in the number of sick or dead rats would soon be detected by the sanitary staff. There, however, remains a break in the chain of circumstances necessary for human infection which has not been satisfactorily explained as yet.

The Murder of Dr. C. Lalcaca.

Dr. Lalcaca was one of the best known and most prominent medical men in Shanghai, where he had practised for 23 years. You are certain to have given particulars of his career.[1] In Shanghai he was one of the leaders of the local Parsee community. He was very popular socially and was one of the keenest members of the Shanghai Volunteer Corps, in which he held the rank of surgeon-major and principal medical officer of the corps. All matters affecting the Parsees possessed warm interest for Dr. Lalcaca, and it was always felt that although he came most frequently into association with people of other foreign communities his own people were never forgotten and ever retained a place in his affection. Not only residents in Shanghai, but people of the Far East generally, from Japan to India, are mourning the tragic termination to an active, useful, and unselfish life.

The Far Eastern Association of Tropical Medicine.

This society has been formed as the outcome of a report made by a committee appointed by the Philippine Islands

[1] THE LANCET, July 10th, 1909, p. 120.

Medical Association. It is hoped thus to unite into one compact organisation the medical profession in the Far East. In addition to promoting the science and art of tropical medicine it, among other objects, hopes to advance and elevate the standard of medical education among Asiatics. The first biennial meeting will be held in March, 1910, at Bagnio, Benguet, the summer capital of the Philippines, and a programme in outline is now being circulated calling for papers on protozoology, helminthology, dysentery, beri-beri, cholera, plague, leprosy, &c. There will be a day specially devoted to tuberculosis. A visit to the Philippines, with the opportunity for inspection of the progressive methods of the American Naval and Military Services and of meeting American medical men, should be a strong incentive to make this first meeting a success. Dr. Francis W. Clark, medical officer of health of Hong-Kong, is the secretary-treasurer for China.

July 10th.

Obituary.

ARTHUR FOXWELL, M.D. CAMB., F.R.C.P. LOND.,

PHYSICIAN TO THE QUEEN'S HOSPITAL, BIRMINGHAM; PROFESSOR OF THERAPEUTICS, UNIVERSITY OF BIRMINGHAM.

BY the death of Dr. Arthur Foxwell, senior physician to the Queen's Hospital, Birmingham, under exceptionally sudden and sad circumstances, the medical profession has suffered a great loss. Dr. Foxwell was riding a bicycle near Warwick on the evening of Sunday, August 1st. While descending a hill a dog ran out suddenly into the front wheel of the machine. Dr. Foxwell was thrown violently over the handle-bar, was picked up insensible, and was removed at once to the Warneford Hospital, Leamington. It was found that he had sustained severe injuries to the head and spine from which he never regained consciousness and from which he died on the early morning of Wednesday, the 4th.

Dr. Foxwell was born at Shepton Mallet on July 13th, 1853; he was the third son of the late Mr. Thomas Somerton Foxwell of Weston-super-Mare. He received his early education at Queen's College, Taunton, afterwards at St. John's College, Cambridge, and subsequently at St. Thomas's Hospital. He took the degree of B.A. Lond. with honours in 1873 and the degree of B.A. Camb. in 1877, also with honours in natural science, in 1883 the degree of M.B. (first class in medicine), and in 1891 the degrees of M.A. and M.D. He became a Fellow of the Royal College of Physicians of London in 1892, and received the degree of M.Sc. of Birmingham on his appointment as Professor of Therapeutics in that University in 1901. After holding the posts of house physician to St. Thomas's Hospital, clinical assistant to the Brompton Hospital, and medical officer to the Children's Hospital, Pendlebury, he was elected to the office of pathologist to the General Hospital, Birmingham. From this he was appointed assistant physician during the years 1885 to 1889, when he was elected to the staff of the Queen's Hospital, which post he held to the time of his death. He was Bradshawe lecturer of the Royal College of Physicians of London in 1899, gave the Ingleby lectures in Birmingham in 1892, was examiner in medicine at the University of Cambridge, and also held a number of other professional appointments. Dr. Foxwell filled a place in the medical life of Birmingham that was due wholly to his individuality and great gifts of head and heart, and because of these it will be hard to fill that place which he has left so suddenly in the fulness of his powers, and when his wide experience was yielding a rich return for years of patient and accurate work.

It is not an easy task to single out for remark any quality in one whose whole personality was strongly marked. But whatever the circumstances, whether as the hospital physician, the teacher, the doctor, or the man in his own home, the feature which attracted above all others was his high ideal of life and work. Work was to be done for its own sake, and work well done never failed to meet with generous appreciation and honour from him He himself was a worker of the first order, with a gift of keen criticism. No new idea or fact escaped his notice, but nothing was accepted without a thorough testing of its worth by himself, for so deep was his scientific insight that he rapidly detected any flaw in argument and any misinterpretation of facts. His clinical teaching, therefore, was of a high standard, more adapted perhaps for the senior student than the junior, in that his extensive knowledge of pathology and higher medicine took him so far ahead that at times he seemed to forget that it was not given to all his students to follow where he led. Dr. Foxwell appeared at his best and often in his brightest moods at consultations of the hospital staff; then he gave free rein to his faculty for drawing inferences from observed facts. It was on these occasions that his power of criticism was keenest, and when it happened that the case down for discussion was his own, his summing up of evidence for a diagnosis was a lesson in clinical medicine. A similar accuracy in the observation of facts and care in drawing conclusions characterised all his writings, and none could speak or write with greater ease or grace, for in all his teaching and writing he was fastidious. His contributions to medical literature are select. His investigations into the causation of functional defects of the heart, the pericardium, vascular diseases, and lesions of the liver are well known and have set a standard of clinical research in Birmingham among his colleagues. He published the following works: In 1895, "Essays in Heart and Lung Disease"; in 1896, "The Enlarged Cirrhotic Liver"; in 1897, "The Spas of Mid-Wales"; in 1899, "The Causation of Functional Heart Murmurs," the Bradshawe Lecture which appeared in THE LANCET, as did his address on "Inhalation" in 1907, and on "The Clinical Examination of the Urine with Especial Reference to the Estimation of Urea" in 1908. He published a number of papers in other medical journals. He strongly believed in the climatic treatment of disease, and to this subject he devoted a great deal of attention. He had travelled much to visit the health resorts of Switzerland, France, and Germany, and his lectures on climatology were largely the result of personal knowledge of the places where patients are usually sent.

Dr. Foxwell held strong views as to the duties of members of the staff in addition to their clinical work in the hospital. He took a great interest in the building of the new medical block at Queen's Hospital and his speech at the opening ceremony in 1908 is well remembered by those who were present for its aptness and grace of diction. To Dr. Foxwell was due the construction of a roof ward in the medical block, for so fully did he realise the advantages to be gained by treating acute diseases of many kinds in the open air that his strong advocacy prevailed and an important and new feature was introduced into the routine of hospital treatment. Already results have shown the wisdom of his advice. In point of fact, the general design and arrangement of the medical block are due to this wise physician's versatility, as the plans were largely drafted on his suggestions.

Dr. Foxwell's share in public work did not extend much beyond Queen's Hospital. He was not physically strong, and although he took a constant interest, and held office, in the medical societies, he felt constrained to spare his energy. For this reason he did not appear in municipal life, nor even much in society, though he held strong opinions on, and watched with interest, all that concerned the welfare of the community. As in his work, so in his private life his ideal was high and his interests many and varied. He had a great love for his garden, and his beautiful home—Northfield Grange—was typical of his refined tastes. Those who were privileged to see him there were always conscious of a peculiar influence, almost a fascination, he had over others, due to a wide culture. He talked with an ease on literature, art, and nature that could only come of acquaintance grounded on thoughtful appreciation of those things which make for fulness of life. Like many of high intellectual order, he had several sides to his character—the cold, clear, and logical, and the contemplative, almost mystical. In movements of expansiveness—for in many ways he was a reserved man—he would talk with keen delight of the simple everyday joys of life, and pass thence to speak of what he called the "dreamy West Country," from which he came. His friends knew that he was loyal and true; that his advice was at their service in all matters where help was needed. It has already been suggested to found a prize or medal in his memory, to be given for proficiency in clinical research or some branch of medicine in which he was particularly interested.

Dr. Foxwell married in 1889 the widow of the late Mr. Robert Pollack, and daughter of the late Mr. Charles

Hollins of Torquay. He has left one daughter. He was laid to rest on August 7th in the quiet burial ground of the Franciscans at Olton, in the presence of those who belonged to him and had worked with him, and for whom he worked with singleness of purpose, sparing no pains for their good. To his family has gone out a great and sincere sympathy from those who knew his worth.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. Gustav Lott, extraordinary professor of midwifery and gynæcology in the University of Vienna.—Dr. Andreas Gorka, lecturer on odontology in the University of Lemberg.—Dr. R. Bergh of Copenhagen, Corresponding Member of the Paris Academy of Science.—Dr. Heinrich Max Runge, professor of midwifery and gynæcology and director of the Göttingen University clinic for diseases of women, aged 60. At one time he was assistant to von Leyden at Strasburg. He afterwards lectured in Berlin, whence he was invited to take the obstetrical chair at Dorpat, and in 1888 he was appointed to Göttingen. He was the author of the official Prussian instruction book for midwives, and wrote a well-known pamphlet on the diseases of the newly born.—Fräulein Mestorf, director of the Schleswig-Holstein Anthropological Museum, at the age of 79 years. The deceased lady held the title of professor and the honorary M.D. of the University of Kiel.

Medical News.

UNIVERSITY OF LONDON.—At the second examination for medical degrees, Part II., held in July, the following candidates were successful:—

Under Old Regulations.—Helen Patricia Barnes, London (Royal Free Hospital) School of Medicine for Women; Grantley Barratt, London Hospital; Margaret Mary Basden, London (Royal Free Hospital) School of Medicine for Women; William Butterfield, Middlesex Hospital; Gilbert Charles Chubb, D.Sc., University College; Albert James Clarke, St. Bartholomew's Hospital; David Arwyn Davies, Guy's Hospital; Isaac Milton Davies and John Lloyd Davies, University College, Cardiff; *Macormack Charles F. Easmon, St. Mary's Hospital; George Ernest Elkington, University of Birmingham; Abel Evans, University College, Cardiff; Maud F. Forrester-Brown, London (Royal Free Hospital) School of Medicine for Women; George Edward Genge-Andrews and William Stanley George, Guy's Hospital; *†John Torbet Smith Gibson (Scholarship in Physiology), St. Mary's Hospital; Wilfrid Montague Glenister, St. Bartholomew's Hospital; Norman Frankish Graham and *†‡Thomas Chivers Graves (Scholarship in Pharmacology), University College; ‡Geoffrey Hadfield and *§Thomas Edwin Hammond (Scholarship in Anatomy), St. Bartholomew's Hospital; Harold William Hills, University College; Bernard Whitchurch Howell, St. Bartholomew's Hospital; Christopher Martin Ingoldby, London Hospital; John Cecil Jefferson and William Henry Kauntze, Victoria University of Manchester; Robert Henry Liscombe, University College; Joseph Howell Lloyd, London Hospital; Melville Douglas Mackenzie, St. Bartholomew's Hospital; Philip Henry Mitchiner, St. Thomas's Hospital; William Hilton Parry, University of Liverpool; Donovan Blaise Pascall, St. Bartholomew's Hospital; George Harold Pearson, London Hospital; Thomas Harold Phillips, University College, Cardiff; Sidney Bertram Radley, Victoria University of Manchester; Noel Ravenchil Rawson and Douglas Ross, London Hospital; Samuel Pryce Rowlands, University College, Cardiff; George William Shore, King's College; Henry Kenneth Victor Soltau, St. Bartholomew's Hospital; Douglas Benham Spence, St. Thomas's Hospital; ‡William Steuart, St. Bartholomew's Hospital; Julian Taylor, University College; Ernest Alfred Tozer, London Hospital; Catherine Violet Turner, London (Royal Free Hospital) School of Medicine for Women; Aubrey William Venables, St. Mary's Hospital; Thomas Davies Williams, London Hospital; Edward Alfred Wilson, Middlesex Hospital; Bernard Woodhouse, University College; and William Wilson Woods, London Hospital.

Under Revised Regulations.—‡Cuthbert H. Attenborough, King's College; Richard Frank Bolt, University College, Bristol; Philip Vanner Early, University College; Robert Hamer Hodges, King's College; Charles Eric Sweeting Jackson, St. Mary's Hospital; Andrew Carey McAllister and Victor Ewings Negus, King's College; William Simpson, St. Bartholomew's Hospital; and Reginald Westmore Spence, King's College.

* Distinguished in Anatomy. † Distinguished in Physiology. ‡ Distinguished in Pharmacology. § Distinguished in Physiology and obtained marks qualifying for the Scholarship.

N.B.—This list, published for the convenience of candidates, is issued subject to its approval by the Senate.

FOREIGN UNIVERSITY INTELLIGENCE.—*Berlin:* Dr. Georg F. Nicolai, *privat-docent* of Physiology, has been granted the title of Professor.—*Bonn:* Dr. H. Leo, who has been fulfilling the duties of the Chair of Pharmacology since Professor Binz's death, has been appointed Professor.—*Bordeaux:* The Professorships of Therapeutics and of Operative Medicine have been suppressed and replaced by Chairs of Dermatology and of the Urinary Organs to which Dr. Dubreuilh and Dr. Pousson have been respectively appointed.—*Cologne:* Dr. Cremer of Munich has been offered a post as physician to the municipal hospitals and Lecturer in Physiology to the Academy of Practical Medicine.—*Erlangen:* Dr. Karl Kleist, Assistant in the Clinic for Mental Diseases, has been recognised as *privat-docent* of Psychiatry.—*Göttingen:* Dr. Eichelberg, *privat-docent* of Nervous Diseases, has been appointed Physician to the University Clinic for Mental and Nervous Diseases.—*Greifswald:* Dr. Adolf Hoffmann, Assistant to Professor Payr, has been recognised as *privat-docent* of Surgery.—*Halle:* Dr. von Hippel, jun., has been appointed Professor of Ophthalmology in succession to Professor Schmidt-Rimpler, retired.—*Heidelberg:* Dr. Julius Hegener, *privat-docent* of Otology, has been promoted to an Extraordinary Professorship.—*Innsbruck:* Dr. Rudolf Fick, Professor in the German University of Prague, has been appointed Professor of Anatomy in succession to Professor Hochstetter.—*Kharkoff:* Dr. Grusdeff of St. Petersburg has been appointed Professor of Clinical Medicine.—*Königsberg:* Dr. Lissauer has been recognised as *privat-docent* of Pathology and Pathological Anatomy.—*Leipsic:* Dr. Gros, assistant to Professor Böhm, has been recognised as *privat-docent* of Pharmacology, and Dr. Dittler as *privat-docent* of Physiology. Dr. Wichern, Assistant in the University Medical Clinic, has been recognised as *privat-docent* of Medicine. The University is celebrating the 500th anniversary of its foundation.—*Munich:* Dr. Ernst Rüdin has been recognised as *privat-docent* of Psychiatry.—*Prague (Bohemian University):* Dr. Lhotak von Lhota has been appointed Extraordinary Professor of Pharmacology. Dr. Bukovsky, *privat-docent* of Dermatology; Dr. Völker, *privat-docent* of Anatomy; and Dr. Chalupecky, *privat-docent* of Ophthalmology, have been granted the title of Extraordinary Professor.—*Rome:* Dr. Carlo Palermo of Messina has been recognised as *privat-docent* of Ophthalmology.—*Strasburg:* Dr. Adalbert Czerny of Breslau has been appointed Professor of Children's Diseases.—*Vienna:* Dr. Glaessner has been recognised as *privat-docent* of Medicine.

DONATIONS AND BEQUESTS.—Mr. Ernest F. Schiff has presented through Mr. A. W. Mayo Robson £100,000 to the Home of Recovery for Surgical Patients, which was established in 1907 under the presidency of the Princess of Louise, Duchess of Argyll.—Among other bequests the late Sir Andrew Lusk left £500 to the Asylum for Idiots, Earlswood, and a similar amount to the Greenock Hospital and Infirmary.—Under the will of the late Miss Mary Howard the Cancer Research Fund will receive £1000 and the Surgical Aid Society £500. For the endowment of a bed in the children's ward of St. Peter's Home, Woking, the testatrix has also left £500.—The late Alderman George Peters of Gloucester has bequeathed about £6000 to the Children's Free Hospital, Kingsholme, Gloucester, to endow a "Peters" bed, and £6000 to the general committee of the Gloucester Royal Infirmary for general purposes.—The executors of the late Mr. Harry Barnato have decided to apply the sum of £250,000 to the building and endowment of an institution for the reception of cancer patients, which is to be administered in connexion with the Middlesex Hospital.—Miss Sarah Marples of Sheffield has bequeathed £2000 each to the Royal Infirmary, Sheffield, the Royal Hospital, Sheffield, and the Jessop Hospital for Women, Sheffield, and £500 each to the Children's Hospital, the Deaf and Dumb Association, and the Blind Institution, Sheffield.—By the death of Miss Mary Hezmalhalch the following bequests made under her brother's will now become payable: £1000 each to the Leeds General Infirmary, the Yorkshire Deaf and Dumb Institution, the Leeds United Deaf and Dumb Institution, the Harrogate Bath Hospital, and the Harrogate Cottage Hospital; £500 to the Leeds Hospital for Women and Children, and £250 each to the Leeds District Nursing Institution, the Ida Convalescent Home, the Ilkley Bath Hospital, and the Leeds Victoria Home for Invalid Ladies.—The late Mr. L. G. Young of Cheltenham has bequeathed the following sums to the local medical

charities: £2000 each to the General Hospital, the Home for Sick Children, the Infectious Diseases Hospital, and the District Nursing Association; and £1000 each to the Eye, Ear, and Throat Hospital and the Cotswold Convalescent Home.

THE BRISTOL ROYAL INFIRMARY.—About £1500 have been subscribed towards the fund being raised to wipe off the adverse balance of £3500 which exists against the Bristol Royal Infirmary. If another £1000 are shortly received, Mr. S. White has promised to contribute a similar amount.

THE WATER-SUPPLY OF DAWLISH (DEVON).—The formal opening of the Dawlish West water-supply took place recently in the presence of a large gathering. The water is drawn from a spring at Duckaller, and will supply the Cofton and Warren districts of Dawlish. About £3000 have been expended on the works.

FOREIGN STUDENTS IN BERLIN.—The German Students' Society, representing 32 students corps, has petitioned the University of Berlin not to accept the matriculation of foreigners until six weeks after the commencement of the session, the reason assigned being that Germans frequently find that the best places in scientific laboratories, &c., have been already assigned to foreign students before they themselves apply for them. Were this petition to be granted foreign students would, of course, be at a great disadvantage, and there is said to be no probability of the authorities agreeing to it.

PUNISHMENT OF FOOD PURVEYORS.—Two recent police-court cases will, it is to be hoped, prove of service in deterring food purveyors from exposing for sale food unfit for human consumption. The first was a very bad instance of this offence, in which Thomas Gent of East India Dock-road was found with 829 pounds of rotten beef and mutton in his possession. This meat, according to Inspector Billing, who gave evidence at the Clerkenwell police-court, was soft and slimy and smelt offensively. The defendant said he had bought the meat at a fair price and that his managers were the responsible parties, but was unable to explain to the magistrate why some of the meat had been offered at 2*d.* a pound if his manager knew it to be sound. He had to pay a fine of £50 with 5 guineas costs, an exemplary penalty so far as fines go. The other offender was Lorenzo Marcantonio, an Italian manufacturer and purveyor of ice-cream, who was summoned at Marylebone on August 6th for carrying on his business under horribly insanitary conditions. Mr. Freke Palmer, who conducted the prosecution, gave some unsavoury details as to the history of the offending ice-cream. It was frozen in a shed in direct communication with a water-closet and a drain and containing a dustbin, after it had been boiled in a bed-sitting room in which three adults passed the night. The magistrate, Mr. Denman, said that he "could not think of these cases without a shudder," and he was informed that the chief reason of their occurrence was that the Italians were not allowed to carry on their disgusting trade in their own country. He fined the defendant 40*s.* and 2*s.* costs, which, we regret to say, is the maximum which he was empowered to inflict.

A BREACH OF THE CHOLERA REGULATIONS OF THE PORT OF LONDON.—Recently, at Tower Bridge police-court, Mr. Baggallay fined the master of the steamship *Irkutsch* £20 and 3 guineas costs for wilfully neglecting to obey a notice requiring that none of the passengers were to be allowed to leave his vessel until their addresses had been verified and permission to disembark given in writing. Mr. T. G. Vickery, in support of the summons, said that the vessel arrived at Gravesend from St. Petersburg, in which city there was a serious epidemic of cholera, and the medical officer of the Port of London sanitary authority served a notice on the master in accordance with the regulations of the Local Government Board issued 11 months ago and in the terms already mentioned. In spite of this, nine passengers were allowed to leave the ship before she was docked higher up the river. The master's excuse was that he had not read the instructions which were printed in a footnote to the notice, and he had tendered an apology. Mr. Vickery admitted that the breach might be partly accounted for by the master's ignorance of the English language, though the ship belonged to a British company. For the defence Mr. Kenelm Preedy argued that the breach of regulations had not been committed wilfully but through a misunderstanding. The magistrate said that the port authorities would have failed in their duty if they had not brought the case into court, as the tracing of passengers from infected ports was one of the only methods by which cholera could be kept out of England. The master had disobeyed plain instructions and he would accordingly have to pay a £20 fine.

THE TORQUAY SANATORIUM.—The report of the medical officer of the Torquay Sanatorium, which has been recently issued, shows that during 1908, 149 cases had been admitted: 86 cases of diphtheria, 59 of scarlet fever, 1 of enteric fever, 1 of erysipelas, while 2 patients were admitted to be kept under observation. 134 patients were discharged cured, six terminated fatally, and nine were under treatment at the close of the year. The average stay of diphtheria cases was 22 days and that of scarlet fever 39 days. The cost of working the institution for the year was £1150.

THE RECENT INTERNATIONAL CONGRESS OF NURSES.—A short account of the proceedings of the recent International Congress of Nurses in London was published in THE LANCET of July 24th, p. 252, and considerations of space have hitherto prevented our further notice of them. At the opening meeting the question of registration of nurses was considered and Mr. Sydney Holland was invited to put forward his objections to that measure, which he did in terms familiar to most of our readers. The congress adopted a resolution advocating registration. In the session dealing with the nurse in private practice Mr. D'Arcy Power contributed a paper on The Doctor's View, while Madame Alphen Salvador (Paris) and Miss Beatrice Kent represented the patients' and the nurses' views respectively. From the qualities and acquirements enumerated as necessary in the private nurse it would appear remarkable, not that she should so frequently fall short of such perfection, but that they should ever exist in combination; especially, as the chairman pointed out, they were expected in a young woman of 26 or thereabouts. The Nurse as Citizen formed the topic of one session, and Lady Helen Munro-Ferguson, who presided, gave an excellent introductory address. Commenting upon the remarkable and varied development of nursing in the last 50 years she drew attention to its inclusion at the present time in every branch of social service; where other professions and trades tended to become more and more specialised, to the nurse new fields of work were ever opening. On her work depended a large amount of preventive treatment. Papers on the subject were contributed by Miss Adelaide Nutting (New York) and Mdlle. Chaptal (Paris), and the discussion which followed included such questions as the Factory Nurse and Nursing in Prisons. In the last regard Mrs. Bedford Fenwick stated that reform was necessary, not so much in the prison hospitals, but in the care of the ordinary prisoners, and she urged that the matrons of prisons should be trained in nursing, hygiene, and sanitation, while the warders and wardresses should have at least some elementary knowledge of these subjects, and especially should they be trained in the observation and nursing of mental disease. The Relations of Nursing and Medicine were dealt with by Miss Mollett and Dr. Robert Sevestre. In the session on the Care of the Insane Dr. Robert Jones gave in outline a brief history of the reform in the treatment of mental disease in Europe in the last hundred years. A detailed survey of the nursing of mental cases had been prepared for the Congress by Dr. W. L. Russell, medical inspector of the State Commission in Lunacy, New York, which was read by Miss Goodrich. Other questions discussed were Army Nursing, on which Mr. Haldane, Secretary of State for War, addressed the conference. He said that in his scheme of territorial defence the skill of scientifically trained women was wanted as part of the organisation. Never before had women been called on to so large an extent to share in a national scheme, and he wished to say how deeply appreciative they were at the War Office of the work which women were doing for the State. Miss Elston (Bordeaux) gave an outline of army nursing organisation in France, which is beginning to show

much needed improvement; and Mrs. Bedford Fenwick called attention to the need of reform in our own naval nursing service, which had not profited, like the army nursing, from the South African war. The last day's conference was concerned with health and mission nursing in foreign fields.

THE ROYAL UNITED HOSPITAL, BATH.—A new out-patient department, an isolation house, and a home for the accommodation of the nursing staff have been recently added to the Royal United Hospital, Bath.

Dr. Hansen of Bergen and Dr. Morisani of Naples have been elected Foreign Associates of the Paris Academy of Medicine.

A DEVONSHIRE CENTENARIAN.—Mrs. Johanna Dillon of Inwardleigh, who celebrated the 103rd anniversary of her birthday on June 26th, died on July 31st. She was born at Coleridge, Devon, and had always resided in her native county.

EAST CORNWALL HOSPITAL, BODMIN.—The committee has decided to erect a new hospital in Rhind-street, Bodmin. Plans have been approved and the new building will contain male and female wards to accommodate six beds each, two private wards, operating theatre, out-patient department, consisting of consulting-room, dispensary, &c., accommodation for the matron and medical staff, &c.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Anæsthetics Bill.

SIX notices of motion to reject Mr. COOPER'S Anæsthetics Bill now stand on the order paper of the House of Commons. The Members who have brought forward those notices are Mr. SNOWDEN, Mr. WILES, Mr. HARWOOD, Mr. JOYNSON-HICKS, Mr. HOGAN, and Mr. KENDAL O'BRIEN. With opposition in front of it, there is no chance of further progress being made with the Bill at this period of the session.

Ambulances (Metropolis) Bill.

Mr. PEEL'S Ambulances (Metropolis) Bill, which is now published, provides that the ambulance service in the metropolis should be maintained by the Metropolitan Asylums Board. This carries out the recommendation of the majority of the recent Departmental Committee in regard to the authority which is to administer an ambulance service in London. Two members of the committee favoured this plan, but the third, Sir WILLIAM COLLINS, M.P., desired that the work should be undertaken under the auspices of the County Council. Soon after the issue of the report of the Departmental Committee he introduced into the House of Commons his Metropolitan Ambulances Bill, making the County Council the administrative authority. A second reading has been obtained for it, and it is now awaiting consideration at the hands of a Parliamentary Committee. The outlines of this situation are set out in a memorandum to Mr. PEEL'S Bill, and it emphasises the fact that his measure follows the recommendation of the majority of the Departmental Committee. Besides proposing the Metropolitan Asylums Board as the authority to establish the ambulance service, it also provides, in accordance with the report of the committee, that the Commissioner of Police of the metropolis should be empowered to enter into agreements in connexion with such a service (1) with the Metropolitan Asylums Board; and (2) with the board of guardians of the poor of any parish or union without the county of London but within the metropolitan police district as to the use of ambulances for street cases in that district. It is also stated in the Memorandum that on June 3rd, 1909, the Secretary of State for the Home Department asked to be furnished with the observations of the Metropolitan Asylums Board on the report of the departmental committee, and on June 19th, 1909, the Board passed the following resolution:—

"That the Secretary of State for the Home Department be informed, in reply to his letter of the 3rd June, 1909, that the managers entirely concur in the evidence given by the clerk to the Board before the Departmental Committee on the Ambulance Service in the metropolis; and that in the event of the necessary authority being conferred on the managers by Parliament, they are convinced that they could speedily and economically inaugurate an efficient service of rapid ambulances for 'street cases' for the administrative county of London, and, if considered desirable, for the outlying portions of the Metropolitan Police District."

Lord ROBERT CECIL, Mr. CROOKS, Mr. HENRY GOOCH, and Mr. HAY were associated with Mr. PEEL in bringing forward the Bill.

Local Education Authorities (Medical Treatment) Bill.

When the House of Lords on Wednesday, August 4th, considered the Local Education Authorities (Medical Treatment) Bill in committee Lord BELPER expressed a fear that one of its clauses, if unaltered, would introduce an optional element into the medical inspection of school children under the Act of 1907. The Earl of CREWE promised to investigate the matter before the next stage of the Bill, which was then allowed to pass through committee without amendment.

Milk Legislation and Tuberculous Cows.

An obstacle to the rapid passage of the Bills dealing with milk-supply and dairies in England and Scotland was disclosed in a short debate in the House of Lords on Wednesday, August 4th. For their full effect these measures are, in great degree, bound up with the Tuberculosis Order recently issued by the Board of Agriculture. Under it compensation is proposed to be given for cattle slaughtered on account of tuberculosis. On August 4th the Government were pressed to give an estimate of the probable cost of compensation so far as Scotland was concerned. Lord PENTLAND, the Secretary for Scotland, replied that at present the Board of Agriculture had no reliable statistics on which to form an estimate, but the President of the Board was engaged in an attempt to arrive at a computation of the number of cattle which would fall to be dealt with under the tuberculosis order. He further demurred at the suggestion that the progress of legislation should be hung up pending the result of the inquiries of the Board of Agriculture. This evidently was not the view of several other noble lords. They urged the advisability of waiting for the statistics to be provided by the Board of Agriculture before giving the Bill a third reading. Some objection was also taken to the course adopted by the Government of dealing with England and Scotland in separate Bills. The result of the discussion was that the Earl of CREWE, on behalf of the Government, with unconcealed reluctance, agreed to defer the motion for the third reading of the Milk and Dairies (Scotland) Bill. Some of the considerations advanced in favour of the delay of this measure would apply with equal force to the case of the English Bill. The session is now far advanced, and as the main attention of Parliament will be devoted to the controversies involved in the Finance Bill, the prospect of the Government's Milk Bills reaching the Statute Book this year is becoming less and less assured as the weeks pass.

The Parliamentary Session.

For a fortnight there has been a lull in the proceedings of the House of Commons. Many honourable Members have been taking a holiday, but with the reappearance of the Finance Bill this week, as the principal order of the day, the strenuous life of Parliament has recommenced. This is the season of the year when Governments are usually trying to wind up the session with expedition. However, this year it would seem that the hardest weeks have yet to come. There is a prospect of many prolonged sittings extending into the morning hours, and bringing with them a great strain on the physical resources of Members who remain in attendance at Westminster.

The Report of the Whisky Commission.

In the Final Report of the Royal Commission on Whisky and other Potable Spirits the Commissioners are unable to recommend that the use of the word "whisky" should be restricted to spirit manufactured by the pot-still process, stating that they have received no evidence to show that the form of still has any necessary relation to the wholesomeness of the spirit produced. They have framed a definition of "whisky" to which the product of both the pot and patent still processes may conform. According to it whisky is a spirit obtained by distillation from a mash of cereal grains saccharified by the diastase of malt. The Commission devoted a considerable portion of its inquiries to brandy, rum, geneva, gin, and liqueurs. One of the conclusions come to is that the term "brandy" is applicable to a potable spirit manufactured from fermented grape-juice and from no other materials. However, it is added that the compounded spirit recognised by the name of "British brandy" is entitled still to be sold under that designation. The report is a unanimous one.

HOUSE OF COMMONS.

THURSDAY, AUGUST 5TH.

Civil Surgeons in India.

Mr. J. MACVEAGH asked the Under Secretary of State for India whether he was aware that the civil surgeons in India were usually medical men belonging to the Indian Medical Service, and that their duties were very light and left them ample time for private practice; whether the same work was done in the native states by medical men who did not belong to the Indian Medical Service at a much less cost and to the entire satisfaction of the Government and the public; and whether he could say when he would introduce his proposed scheme for the reform of the medical service of India.—The MASTER of ELIBANK wrote in reply: The hon. Member is correct in stating that the civil surgeons in India are usually officers of the Indian Medical Service. The Secretary of State has no detailed information as to the amount of time which they are able to spare from their official duties for private practice, nor is anything known as to the work of medical practitioners in native States. The Secretary of State is still in communication with the Government of India in regard to the best means of promoting the growth of an independent medical profession in India.

Plague in India.

The MASTER of ELIBANK, Under-Secretary of State for India, in the course of his speech on the Indian Budget, said that with regard to plague, its decreasing virulence during the last two years was encouraging. In 1906 it was hoped that the worst had been seen of the disease. In each of the two preceding years the mortality had exceeded 1,000,000, but in 1906 it dropped to 357,000, and keen was the disappointment of the Indian Government when the following year proved to be the worst that had been experienced. A mortality of upwards of 1,500,000 showed that the enemy had lost none of its strength. But in 1908 the death-rate was reduced to one-ninth of that of the preceding year—namely, 150,000—and in the first six months of this year, in which owing to climatic reasons the mortality was always higher than in the latter part of the year, it amounted to 84,000. Let him at once say in fairness to the Indian peoples that they were beginning to understand the principles under which the plague should be combated and were showing an increasing disposition to cooperate with the Government in its endeavours to deal with its scientific aspect. The Government of India was fully alive to its responsibilities and attached se much importance to disseminating knowledge that simple instruction on the subject of the plague and sanitation were now given in the elementary schools of the land. In the course of his speech the honourable gentleman expressed appreciation of the heroism of the Indian gentleman, Dr. Lalcaca, who gave his life in a fruitless endeavour to save the life of Sir Curzon Wyllie.

TUESDAY, AUGUST 10TH.

The Heroism of Dr. Lalcaca.

Mr. KEIR HARDIE asked the Under Secretary of State for India whether it was intended by the Government in any way to recognise the heroism of the late Dr. Lalcaca, who sacrificed his life in an effort to save that of Sir W. Curzon Wyllie.—The MASTER of ELIBANK replied: I was glad to have an opportunity last Thursday of expressing on behalf of the Government its deep appreciation of Dr. Lalcaca's heroic action, and I can only repeat that it shares in the fullest degree the feeling which is universal, in this House and outside of it. The Secretary of State has considered whether the particular circumstances of the case are such that appreciation could appropriately be marked by a money grant; but, learning from the Government of India that Dr. Lalcaca was unmarried and that his surviving relatives are well to do, he feels that it is not necessary to take action in that direction.

Reported Cholera at Calcutta.

Mr. REES asked the Under Secretary of State for India whether the Government of Bengal had instituted inquiries into the ten deaths reported of cholera in the Presidency European Hospital, Calcutta; whether it had determined whether the deaths were due to cholera, ptomaine poisoning, or other causes; and, if such inquiries had not been instituted, would the Government have them made.—The MASTER of ELIBANK answered: An inquiry has been instituted and is still pending. The report of Mr. Haffkine, Government bacteriologist, is awaited.

WEDNESDAY, AUGUST 11TH.

Royal Army Medical Corps.

Mr. ASHLEY asked the Secretary of State for War what was the average time that captains and lieutenants of the Royal Army Medical Corps in the British Isles were left in a station without a move during the three years ending March 31st, 1909.—Mr. HALDANE replied: The statistics available do not enable me to give the required information.

Mr. ASHLEY also asked the right honourable gentleman how many officers of the Royal Army Medical Corps on the active list were serving in the British Isles on March 31st last; how many of these officers, during the year ending March 31st last, received their full leave of 61 days; how many over one month, excluding those who were granted their full leave; and how many under one month.—Mr. HALDANE answered: In reply to the first part of the question the number is 518. As regards the rest of the question the details of leave granted to officers are not recorded at the War Office.

BOOKS, ETC., RECEIVED.

APPLETON AND CO., London.

The Principles and Practice of Medicine. By William Osler, M.D., F.R.S., F.R.C.P. Lond., Regius Professor of Medicine, Oxford University. Seventh edition, thoroughly revised. Price, cloth, 21*s.* net.

ASSELIN ET HOUZEAU, Paris.

Les Maladies des Enfants. Par V. Hutinel, avec la Collaboration de MM. Babonneix, Bigart, Darré, Jeanselme, Pierre Lereboullet, Lesné, G. Leven, Louis Martin, P. Merklen, Nobécourt, Paisseau, L. Tixier, Vitry, Roger Voisin. 5 Volumes. Price Fr.100.

BAILLIÈRE, TINDALL, AND COX, London.

A Manual for Students of Massage. By Mary Anna Ellison. Third edition. Price 5*s.* net.

Surgical Anæsthesia. By H. Bellamy Gardner, M.R.C.S., L.R.C.P. Lond. Price 5*s.* net.

Aids to the Analysis of Food and Drugs. By C. G. Moor, M.A. Cantab., F.I.C., and William Partridge, F.I.C. Third edition. Price, cloth, 3*s.* 6*d.* net.

Aids to the Mathematics of Hygiene. By R. Bruce Ferguson, M.A., M.D., B.C. Cantab., D.P.H. Eng., &c. Fourth edition. Price, paper, 2*s.* net.; cloth, 2*s.* 6*d.* net.

BALE (JOHN), SONS AND DANIELSSON, LIMITED, London.

Blackwater Fever. (Bilious Malignant Tertian Ague.) By A. G. Newell, M.D. Glasg., C.M., L.M., D.P.H. Cantab. Price 5*s.* net.

BELL, GEORGE, AND SONS, London.

An Introduction to the Study of the Comparative Anatomy of Animals. By Gilbert C. Bourne, M.A., D.Sc., F.L.S., F.Z.S. Vol. I. Animal Organisation. The Protozoa and Cœlenterata. Second edition, revised. Price 6*s.*

BOOTHROYD, ELIOT, London.

Low's Handbook to the Charities of London. 1909. Price 1*s.*

CHURCHILL, J. AND A., London.

Report on Plague in the Gold Coast in 1908. By W. J. Simpson, M.D., C.M.G., &c. Price 2*s.* net.

CLARENDON PRESS, Oxford.

The Last Days of Charles II. By Raymond Crawfurd, M.A., M.D. Oxon., F.R.C.P. Price 5*s.* net.

FISCHER, GUSTAV, Jena.

Handbuch der Gesamten Therapie. In sieben Bänden. Herausgegeben von Dr. F. Penzoldt und Dr. R. Stintzing. Vierte umgearbeitete Auflage. Fünfte Lieferung. Price M.4.50.

Lehrbuch der Chirurgie. Herausgegeben von Professor Wullstein und Professor Wilms. Zweiter Band. Zweite Lieferung. Price M.13.50.

Klinische Spektroskopie. Von Otto Schumm, Vorsteher des Chemischen Laboratoriums. Price M.6.

Entwicklung und Fortschritte der Chirurgie. Vortragszyklus, veranstaltet zur Erinnerung an Ernst von Bergmann. Herausgegeben vom Zentralkomitee für das Aerztliche Fortbildungswesen in Preussen, in dessen Auftrage redigiert von Professor Dr. R. Kutner. Price, paper, M.7.; bound, M.8.

FROWDE, HENRY, AND HODDER AND STOUGHTON, London.

The Oxford Medical Publications. A System of Medicine. Edited by William Osler, M.D., F.R.S., assisted by Thomas McCrae, M.D., F.R.C.P. Lond. Volume VI. Price 30*s.* net per volume, or to subscribers 24*s.* net per volume.

Oxford Medical Publications. The Blood in Health and Disease. By R. J. M. Buchanan, M.D., F.R.C.P. Price 12*s.* 6*d.* net.

HEATH, D. C., AND CO., Boston, U.S.A.

Diseases of the Bones and Joints. Clinical Studies. By Joel E. Goldthwait, M.D., Charles F. Painter, M.D., and Robert B. Osgood, M.D. Price not stated.

HERRICK BOOK AND STATIONERY COMPANY, THE, Denver, Colorado.

The Ophthalmic Year Book. Volume VI. By Edward Jackson, A.M., M.D., George E. de Schweinitz, A.M., M.D., and Theodore B. Schneideman, A.M., M.D. Price not stated.

HILL, WALTER, London.

The Holidays, 1909. Where to Stay and What to See. Price 1*s.*

HIRSCHWALD, AUGUST, Berlin.

Die erste ärztliche Hülfe bei Unfallverletzten. Beiträge zur Unfallheilkunde. Von A. Köhler, Berlin. Price M.1.

Ueber die Lage des Wurmfortsatzes. Von Rhaban Liertz. Price M.4.

KLINKHARDT, Dr. WERNER, VERLAG VON, Leipzig.

Das Altern, seine Ursachen und seine Behandlung durch hygienische und therapeutische Massnahmen. Ein Handbuch für eine Rationelle Lebensweise. Von Dr. A. Lorand. Price, paper, M.5, bound, M.6.

LANE, JOHN, London. (JOHN LANE COMPANY, New York.)

Minor Gynæcology. By V. Zachary Cope, B.A., M.D., B.S. Lond. Price 5*s.* net.

LEHMANN, J. F., München.

Jahresbericht über die Königliche Psychiatrische Klinik in München für 1906 und 1907. Price M.3.60.

LEWIS, H. K., London.

Otitic Cerebellar Abscess. By Heinrich Neumann. Translated by Richard Lake, F.R.C.S. Price 4*s.* net.

LONGMANS, GREEN, AND CO., London.

Elementary Chemistry. By Hollis Godfrey. Price 4*s.* 6*d.* net.

MACLEHOSE, JAMES, AND SONS, Glasgow.

Clinical Manual for the Study of Diseases of the Throat. By James Walker Downie, M.B., F.F.P.S.G. Second edition, revised and in large measure rewritten. Price 10*s.* net.

MILLS AND BOON, LIMITED, London.

The Last Lord Avanley. By Gerald Maxwell. Price 6*s.*

REBMAN, LIMITED, London.

Memoirs of the Challenger Society. No 1. Scientific and Biological Researches in the North Atlantic. Conducted by the Author on his Yachts "The Walwin" and "The Silver Belle." By R. Norris Wolfenden, B.A., M.D. Cantab., F.L.S., F.Z.S. Price 10*s.* 6*d.* net.

A Text-book of Mental Diseases. By Eugenio Tanzi. Authorised Translation from the Italian by W. Ford Robertson, M.D., C.M., and T. G. Mackenzie, M.D., F.R.C.P. Edin. Price 24*s.* net.

The Maniac. A Realistic Study of Madness from the Maniac's Point of View. Price 6*s.*

Surgical Diseases of Children. A Modern Treatise on Pediatric Surgery. By Samuel W. Kelley, M.D. Price 21*s.* net.

SANITARY PUBLISHING CO., LIMITED, London.

The Practical Management of Sewage Disposal Works. A Handbook for Those in Charge. By W. C. Easdale, M.S.E., M.R.San.I. Price 2*s.* net.

SAUNDERS (W. B.) COMPANY, Philadelphia and London.

Myomata of the Uterus. By Howard A. Kelly and Thomas S. Cullen. Price, cloth, 35*s.* net.

Primary Studies for Nurses. A Text-book for First Year Pupil Nurses. By Charlotte A. Aikens. Price 8*s.* net.

Dietetics for Nurses. By Julius Friedenwald, M.D., and John Ruhräh, M.D. Second edition, revised and enlarged. Price 6*s.* 6*d.* net.

Diet in Health and Disease. By Julius Friedenwald, M.D., and John Ruhräh, M.D. Price, cloth, 8s. net.
Obstetrics for Nurses. By Joseph B. De Lee, A.M., M.D. Third edition, thoroughly revised and enlarged. Price 12s. net.

SPRINGER, JULIUS, Berlin.
Myeloische Metaplasie und fötale Blutbildung und deren Histogenese. Von Dr. med. Heinrich Fischer. Price M.4.

STEVENS AND SONS, LIMITED, London.
The Law of Compensation for Industrial Diseases. By Edward Thornton Hill Lawes, M.A., B.C.L. Price 7s. 6d.

THIEME, GEORG, Leipzig.
Gülhane-Festschrift zum 10 jährigen Bestehen des Kaiserlich-Osmanischen Lehrkrankenhauses Gülhane. Von Prof. Dr. Wieting Pascha, unter Mitarbeit des Lehrkörpers. Price M.12.

UNIVERSITY PRESS, Manchester. (SHERRATT AND HUGHES, London.)
Semmelweis, His Life and His Doctrine. A Chapter in the History of Medicine. By Sir William J. Sinclair, M.A., M.D. Price 7s. 6d. net.
Modern Problems in Psychiatry. By Ernesto Lugaro. Translated by David Orr, M.D., and R. G. Rows, M.D. With a Foreword by T. S. Clouston, M.D., LL.D. Price 7s. 6d. net.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

HILL, WALTER JAMES, L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer of Health of Clevedon, Somerset.
IRELAND, ARCHIBALD EDWARD, M.R.C.S., L.R.C.P. Lond., D.P.H. Oxon., has been appointed Medical Officer of Health and Government Bacteriologist, Suva, Fiji.
LLOYD, BRIMLEY R., M.B., B.S. Lond., D.P.H., has been appointed Medical Inspector of Schools at Sheffield.
NASH, E. H. T., M.R.C.S., L.R.C.P. Lond., has been appointed Medical Officer of Health of Wimbledon.
RUSSELL, R. F., M.B., B.S. Aberd., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Ollaberry District of the county of Zetland.
TRIMBLE, ROBERT, M.D. Glasg., has been appointed one of the Medical Referees under the Workmen's Compensation Act, 1906, for County Court Circuit No. 4, and to be attached more particularly to Preston, Garstang, and Chorley County Courts.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BIRMINGHAM UNIVERSITY (FACULTY OF MEDICINE).—Professorship of Anatomy. Stipend £800 per annum.
BRIDGWATER HOSPITAL.—House Surgeon, unmarried, for six months. Salary at rate of £100 per annum, with board, lodging, and washing.
BRISTOL, BRENTRY CERTIFIED INEBRIATE REFORMATORY, Westbury-on-Trym.—Superintendent and Medical Officer. Salary £400 per annum, with board and residence.
BRISTOL ROYAL INFIRMARY.—Resident Casualty Officer for six months. Salary at rate of £50 per annum, with board, lodging, and washing.
CAMBRIDGE UNIVERSITY, PATHOLOGICAL LABORATORY.—John Lucas Walker Studentship. Value £200.
CANTERBURY, KENT AND CANTERBURY HOSPITAL.—Assistant House Surgeon, unmarried. Salary £70 per annum, with board and lodging.
CAPETOWN, SOMERSET HOSPITAL.—Assistant Surgeon. Salary £200 per annum, with rations and quarters.
CHELTENHAM GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £70 per annum, with board and lodging.
CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL.—Honorary Ophthalmic Surgeon.
COLCHESTER, ESSEX COUNTY HOSPITAL.—Honorary Dental Surgeon.
DORCHESTER, DORSET COUNTY HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with board and residence.
EBBW VALE STEEL, IRON, AND COAL CO., LIMITED.—Medical Officer for the Inspection of Injured Workmen. Salary £250 per annum.
ECCLES AND PATRICROFT HOSPITAL.—House Surgeon, unmarried. Salary £60 per annum, with board and washing.
EDINBURGH DISTRICT ASYLUM, Bangour Village.—Third Assistant Medical Officer and Pathologist (female). Salary £120 per annum, with board, apartments, and laundry.
GREAT NORTHERN CENTRAL HOSPITAL, Holloway, N.—Two Clinical Assistants in the Ear and Throat Department.
HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Two Clinical Assistants in the Out-patient Department for four months. Salary at rate of £100 per annum.
JAFFRAY BRANCH OF THE GENERAL HOSPITAL, Gravelly Hill, near Birmingham.—Resident Medical and Surgical Officer. Salary £150 per annum, with board, residence, and washing.
LANARK, COUNTY OF.—Two Medical Officers for the Examination and Supervision of School Children. Salary £350 per annum, with travelling expenses.
LEEDS INFECTIOUS DISEASES HOSPITALS.—Resident Medical Officer for six months. Salary at rate of £120 per annum, with board, lodging, and washing.
LEICESTER INFIRMARY.—Assistant House Surgeon for six months. Salary at rate of £60 per annum, with board, apartments, and washing.
LEIGH, BOROUGH OF.—Medical Officer of Health. Salary £400 per annum.
LIVERPOOL, ROYAL SOUTHERN HOSPITAL.—Two House Physicians and Three House Surgeons. Salary at rate of £60 per annum, with board and residence.
LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W.—Resident Medical Officer. Salary £120 per annum, with board and residence. Also Assistant Resident Medical Officer for six months. Salary at rate of 50 guineas per annum, with board and residence.
MACCLESFIELD GENERAL INFIRMARY.—Junior House Surgeon. Salary £60 per annum, with board and residence.
MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Park-place, Cheetham Hill-road.—House Surgeon. Salary £80 per annum, with apartments and board.
MILE END OLD TOWN INFIRMARY AND WORKHOUSE, Bancroft-road, E.—Assistant Medical Officer, unmarried. Salary £150 per annum, with board, lodging, and washing.
MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Hampstead and Northwood, Middlesex.—Junior Resident Medical Officer at Hampstead, also Assistant Resident Medical Officer at Northwood. Salary in each case £50 per annum, with board and residence.
NEWPORT AND MONMOUTHSHIRE HOSPITAL.—House Surgeon. Salary £60 per annum, with board, residence, and laundry.
NORWICH, HEIGHAM HALL PRIVATE ASYLUM.—Assistant Medical Officer. Salary £120 per annum, with all found.
NORWICH, NORFOLK AND NORWICH HOSPITAL.—House Physician, unmarried. Salary £80 per annum, with board, lodging, and washing.
NOTTINGHAM GENERAL DISPENSARY.—Assistant Resident Surgeon, unmarried. Salary £160 per annum, with apartments, attendance, light, and fuel.
PUBLIC DISPENSARY, 122, Drury-lane, W.C.—Resident Medical Officer. Salary £105 per annum, with apartments
QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—Resident Medical Officer. Salary £100 per annum, with board, residence, and washing.
ST. PETER'S HOSPITAL FOR STONE, &c., Henrietta-street, Covent Garden, W.C.—Junior House Surgeon for six months. Salary at rate of £50 per annum, with board, lodging, and washing.
SALISBURY INFIRMARY.—Assistant House Surgeon, unmarried. Salary £50 per annum, with apartments, board, and lodging.
SOUTHWARK INFIRMARY, East Dulwich-grove, S.E.—Assistant Medical Officer. Salary £100 per annum, with board, lodging, and washing.
STOKE-UPON-TRENT WORKHOUSE.—Resident Medical Officer. Salary £175 per annum, with board, washing, and apartments.
SUNDERLAND AND DURHAM COUNTY EYE INFIRMARY, Sunderland.—House Surgeon, unmarried. Salary £210 per annum.
SUNDERLAND, MONKWEARMOUTH AND SOUTHWICK HOSPITAL.—House Surgeon. Salary £100 per annum, with board, residence, and washing.
TEIGNMOUTH HOSPITAL, S. Devon.—House Surgeon. Salary £70 per annum, with board, lodging, and washing.
WEST LONDON HOSPITAL, Hammersmith-road, W.—House Physician, also House Surgeon for six months. Board, lodging, and laundry provided.
WHITEHAVEN AND WEST CUMBERLAND INFIRMARY.—Resident House Surgeon. Salary £120 per annum, with board and lodging.
WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—House Surgeon. Salary at rate of £80 per annum, with board, lodging, and laundry.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies as Certifying Surgeons under the Factory and Workshop Act at Llangefni, in the county of Anglesey; at Saundersfoot, in the county of Pembroke; and at Creetown, in the county of Kirkcudbright.

Births, Marriages, and Deaths.

BIRTHS.

WACHER.—On August 7th, at Chalkwell-gardens, Leigh-on-Sea, the wife of Geoffrey Wacher, L.R.C.S., L.R.C.P., of a daughter.

MARRIAGES.

SILAS—STANNARD.—On July 31st, at Christ Church, Mayfair, Walter B. Silas, M.R.C.S., L.R.C.P., of Southgate-road, N., to Lilian, daughter of Henry Stannard, R.B.A., of Bedford.

GOLDEN WEDDING.

JONES—MORRIS.—On August 11th, 1859, at St. Bartholomew's Church Sydenham, by the Rev. Charles English, M.A., Sydney Jones, M.B. Lond., F.R.C.S., of St. Thomas's-street, Southwark, Curator of the Pathological Museum, St. Thomas's Hospital, London, eighth son of the late Thomas Jones, Walworth, Surrey, to Mary Myrie, elder daughter of Samuel Morris, Sherwood Lodge, Sydenham, of the firm of Messrs. Bevington and Morris, 28, Cannon-street, London, E.C.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE HARMFUL EFFECTS OF ACETANILIDE, ANTIPYRIN, AND PHENACETIN.

A VALUABLE report (Bulletin No. 126, Bureau of Chemistry, United States Department of Agriculture, 85 pp., Washington, July, 1909), has just been prepared by Dr. L. F. Kebler, Dr. F. P. Morgan, and Dr. Philip Ruff on the reports of physicians with regard to their personal experience in the use of acetanilide, antipyrin, and phenacetin. The objects of the inquiry were similar to those of the Therapeutic Committee of the British Medical Association, which in 1894, under the chairmanship of Dr. D. J. Leech, concluded that the ill effects of these remedies were very largely the direct result of injudicious and excessive dosage. This report made a deep impression upon the medical mind, with the result that smaller doses have been given and the number of accidents reported has fallen off to a remarkable extent. Dr. Kebler and his collaborators addressed a series of questions to 925 physicians and received 400 replies which are summarised in Table I.:—

TABLE I.

	Poisoning.	Deaths.	Habitual use.
Acetanilide	614	16	112
Antipyrin	105	5	7
Phenacetin	95	7	17
	814	28	136

A careful search was also made in the medical literature during the period 1884–1907, and the results of this search are given in Table II.:—

TABLE II.

	Poisoning.	Deaths.	Habitual use.
Acetanilide	297	13	32
Antipyrin	488	10	—
Phenacetin	70	3	1
	855	26	33

The section on the literature of the subject occupies 60 pages and contains abstracts of the cases referred to. It forms a valuable bibliography of the subject. Turning to the details of Dr. Kebler's correspondence with physicians, phenacetin was used frequently or moderately by 36·7 per cent. of the physicians, acetanilide by 30 per cent., and antipyrin by only 5 per cent. Phenacetin is most extensively used because it is generally regarded as being the least harmful of these substances. It was found that the doses of these remedies employed to-day are much smaller than those formerly prescribed. In the case of acetanilide, the replies of 274 physicians indicate that 87·5 per cent. of them never prescribe higher doses than five grains, while about 70 per cent. prescribe antipyrin and phenacetin in doses not exceeding five grains. It was also found that from 51 to 66 per cent. of the observers now prescribe these remedies less frequently than formerly. Of the 814 cases of poisoning reported, 94 were children, while the drugs were administered without a physician's prescription in 377, or about 46 per cent., of the cases. This fact is specially significant in connexion with the ever-increasing sale of these drugs, and of preparations containing them, to the public. In such cases the remedy is taken without the safeguards that ordinarily attend the ingestion of medicines when ordered by a physician. It is of interest to note that in the case of acetanilide poisoning resulted from its external application in 2·3 per cent. of the cases. As regards the quantity taken in cases of poisoning, of the 368 cases in which acetanilide was given to adults a dose of five grains or more was given in 89·9 per cent.; with antipyrin a dose of ten or more grains was given in 89·7 per cent. of the cases; while with phenacetin the toxic effects were caused by doses of ten grains or more in 67·8 per cent. of the cases. In children, in over 85 per cent. of the cases the poisonous effects were caused by doses of two grains or more of acetanilide or of three grains or more of antipyrin. The report serves to warn physicians that care should be taken in prescribing these substances, even in relatively small doses.

THE ALPINE MINOTAUR.

NOT more inexorably did the Cretan monster exact his yearly tribute of the Athenian youth, male and female, than does his Alpine counterpart—the evil genius of foolhardy adventure—claim his annual toll of victims. The summer now passing—nay, the winter and spring already past, have numbered quite as many sacrifices as their predecessors to that ruthless Cacodaemon, who may confidently anticipate—so vainly has experience held out its warning—an equal contingent of such in the years yet to come. The old, old story will keep repeating itself; the amateur "peak-stormer," heedless of the fact that his enterprise demands special training, with special equipment and guidance, under special conditions of physique and health, before he can essay it with success or safety, will still venture out and up, in regions unfamiliar, with nothing but curiosity and pluck to sustain him, till, after hours of exertion, he loses his way, his head, and ultimately his life, overtaken by a mist or overwhelmed by an avalanche, or overbalanced on the brink of a crevasse. And this tale, told for the thousandth time, will yet be told for the thousand and first unless some "deus" or demigod "ex machina," in the form of a Theseus in science, aided by the guiding thread of an Ariadne in resource, makes Alpine misadventure and the "Minotaur's" maintenance alike impossible by deterring from pass and peak all but the adequately trained and the physically and mentally "assured." First attempted by the Teutonic races, the exploration of the Alps, unessayed by the Romans on whom the glories of landscape were thrown away, begins with sixteenth century humanism embodied in Conrad Gesner, the Swiss scholar, whose treatise "De Admiratione Montium" may be taken as the "evangel" of mountaineering, scientific and artistic. Of late years, however, the French, and particularly the Italian, nature student and athlete has in ever-increasing numbers enrolled himself in the army of Alpine adventurers, attended, however, by such a host of camp followers in the shape of amateurs as to double, nay treble, the casualties that have hitherto overtaken even the regular recruit. "Impressionanti Disgrazie sulle Alpi" (sensational accidents on the Alps) is the heading in a leading Roman journal of a series of fatalities occurring within the last week of July, mainly to Italian "climbers," illustrating by their experience the well-nigh inevitable results of attempting the most hazardous of all enterprises with less knowledge than zeal and with more recklessness than either. Signor Giovanni Bevilacqua, for instance, having gained a "coign of vantage" on the Diveria at the Bridge of Crevalodossola fell headlong to the bottom, where he was found a corpse. Signor Andrea Consoli, another youth of 21 years, overtaken on the Majenfeldfurku by a furious snowstorm, was frozen to death; and so on in many cases, the rash attempt to pluck a flower on the margin of a precipice, or to root out a mineralogical specimen from a rocky façade, having carried the Alpinista over the edge, or crushed him under a "Steinschuss." Such casualties, it may be said, will be minimised by the "vicarious progression" afforded on funicular or cog-wheel railway. Possibly; but that means of gaining altitudes above the snow-line has dangers of its own, recorded and illustrated at many a Swiss medical congress, memorably in that at Arosa some 10 or 12 years ago. Middle-aged tourists, with cardiac lesion incipient or developed, could run few greater risks than that of being "ballooned" up a mountain side like that of the Jungfrau or (now it seems likely) Mont Blanc—some of them realising for the first time, in distress and panic, that they had such a thing as a heart at all! "Knowledge comes, but wisdom lingers"; and even with the admonitions of medical science we are quite prepared to hear of the holiday-seeker, tempted by the "ampler ether," the "diviner air," of a resort above the snow-line, throwing prudence to the winds, and essaying a "vicarious ascent" safe only for the young and the heart-whole!

"Audax omnia perpeti
Gens humana ruit per vetitum nefas;"

and before the century is much older we may have aerial navigation seducing many a holiday or health-seeker on a voyage confronted by unforeseen dangers, the multiplication of which may inspire medical congresses to discussions and admonitions even graver, if not less idle, than those convened to convince of his folly the middle-aged "altitudinarian."

BAGS AND BOTTLES.

WITH the arrival of the holiday season we are tempted to ask a question which has probably occurred to many of our readers when looking out their baggage in preparation for leaving home, or perhaps when passing a trunk-maker's shop window with its well-ordered display of leather goods. Whilst the first glance at an open trunk or portmanteau can leave no doubt of the function of its every part, the dressing-bag, and in some cases the suit-case—most convenient of impedimenta—if they belong to the more expensive class, present as soon as they are opened a problem on which we seek enlightenment, What did their maker intend their user to put in the array of bottles which they contain? We do not exaggerate in computing that a completely fitted dressing-case carries in addition to its complement of brushes, razors, and mirror, from eight to a dozen glass bottles, and boxes often with decorative lids or tops. We will acknowledge that they look very pretty and that a bag thus equipped forms what is known as an "attractive and handsome present," but the only person to whom we can conceive it as being of the fullest use is the fashionable obstetrician. Such a receptacle would be both appropriate and elegant in the polite *chambre d'accouchement*, for it would not only afford ample space for the implements of his art, but the small pharmacy which accompanies him in the traditional black bag would surely gain an added dignity—possibly an added potency—if conveyed in such handsome bottles as we have in mind. The same thing does not apply to the surgeon, whose preparations are made out of his patient's sight, and the modern physician, if he carry drugs at all, does so in the compressed form convenient for their hypodermic employment. But the great majority of people who own fitted dressing cases are not members of the medical profession, and it is an interesting speculation as to why the upper travelling classes came in the first instance to be supplied with so many bottles. We suspect that these fitted bags had their origin in days when travel was a more

adventurous affair than it is at present and that a certain number of the bottles were intended to hold simple drugs for emergency use—"the spirit of hartshorn" for example, or an aperient draught. Perhaps some people still fill them with such preparations, though probably the tablet drug in the pocket has taken the place of the case of liquid medicines. If our surmise is correct the bag-maker has not advanced his ideas with those of the drug purveyor, but with the conservatism notable in so many trades he continues to supply an article on the model which his grandfather made to a generation that has forgotten its use. Perhaps we are wrong, and people really exist who require a dozen bottles to hold the *arcana* of their daily toilet. But when soap, shaving-soap, tooth-powder, and possibly a preparation for the hair have been provided for, we are at a loss to know how the average man is to fill the rest of the bottles and boxes. We might allow a couple for scent to a lady who affects it, but cannot suppose its most extravagant user to carry a different perfume for every day of the week. Of cosmetics we speak with little knowledge; perhaps they to some extent solve the mystery, but they can hardly find a place in the masculine dressing-case; and we are convinced that whatever be the origin or supposed function of the receptacles in question the average man whose bag contains them would prefer their room to their company.

THE HISTORY OF COLCHICUM.

THE history of colchicum is the subject of a readable article by Dr. J. Gordon Sharp in the *Pharmaceutical Journal* of July 3rd. The name colchicum is derived from Colchis, a district of Asia Minor, now known as Mingrelia and Abasia. The ancient Colchis conveyed to the Greek mind a region associated with all kinds of sorcery, and so any drug coming from it was likely to be held in awe by the ignorant and in discredit by the learned. It is doubtful whether the species Colchicum autumnale grew in Colchis, but it is evident that whatever the species that were employed they were rich in colchicine, judging from the accounts of the value of the drug in articular affections of gouty origin. There is evidence that the "hermodactyl" of the Arabs and the "surinjan" of the Indian bazaars were species of colchicum. It is probable that the drug first became known in Europe shortly before it was described by Dioscorides, or about 78 A.D. The earliest mention of the drug is in the "Ebers Papyrus" (1550 B.C.). Under the name "hermodactyl" the drug was mentioned by Alexander of Tralles in "The Twelve Books of Medicine" (560 A.D.), and Paul of Ægina, in the seventh century, fully described hermodactyl and spoke of its efficacy in gout. Avicenna, the greatest of all Persian physicians (980–1037 A.D.), gave his personal testimony to the value of the drug, and in the thirteenth century Demetrius Pepagomenus, a Greek physician, wrote a treatise on gout and gave the formula of a pill composed of hermodactyl, aloes, and cinnamon. With the distrust of Arab medicine that followed from the thirteenth to the sixteenth century but little was heard of hermodactyl, and under the name colchicum the drug was condemned as dangerous by several writers, and it was ignored altogether by many others, including Culpepper (1616–1652) and the great Sydenham. As so frequently happens, however, a reaction then set in, and during the eighteenth century writers began to suggest that after all there might be some value in the drug. It was official under both names in the London Pharmacopœia of 1618, and one or both names were recognised in succeeding editions up to 1639. An interval of 149 years then elapsed until 1788, when colchicum was made official and the name hermodactyl disappeared. It is interesting to note that colchicum wine was first introduced in 1780 as a secret preparation by Husson, an officer in the French army, and was sold under the name "Eau Médicinale." It attained a great popularity and was largely imitated. Scudamore (1779–1849) wrote largely on gout and its treatment by colchicum, and ever since the drug has occupied an important position in the materia medica. Referring to the modern use of colchicum, Dr. Sharp remarks that the official doses are often exceeded owing to the belief that the drug acts best in doses bordering on the toxic side. The alkaloid is not largely employed, although the salicylate is occasionally prescribed in the form of pills or in solution in methyl salicylate. He suggests that colchicine salicylate will probably be more largely prescribed in future in the form of an ointment to be applied to affected joints.

HISTORICAL RESEARCHES ON SYPHILIS.

To the Editor of THE LANCET.

SIR,—I do not think the attempt of Dr. Kronfeld of Vienna to prove the antiquity of syphilis from the examination of an ancient Greek vase can be considered convincing. In a paper that he read before the Gesellschaft der Aerzte (reported in THE LANCET of July 31st, p. 333) he describes a Greek vase of the seventh or eighth century B.C. which showed very clearly a dark-coloured woman of negroid type presenting "chronic serpiginous ulcerations on her arms and legs," and concluded somewhat hastily that syphilitic lesions were depicted. Sufficient consideration, perhaps, was not given to the fact that there are several examples among Greek and Roman fictile vases in which the dark colouring matter employed by the potter had "run" and in process of time became distorted or obliterated. It may be suggested that in this manner the appearance of the figure examined by Dr. Kronfeld can be explained. Authentic material for elucidating in some measure the lineage of the disease, which so curiously obtained its name from a poem published at Verona in the fifteenth century (*Syphilis sive Morbus Gallicus*, by Jerome Fracastoro), may be found in historical records. In no account of the disease that I have read is there any reference to Herodotus. That historian says that the Scythians of his day suffered from "a severe female distemper," and that it was regarded by the nation as a divine punishment inflicted on their ancestors for having in the course of a predatory raid plundered the famous temple of the Syrian Venus (Derceto) at Ascalon. There are fragmentary passages in other ancient writers from which it would appear that at the dawn of history the people of Athens were afflicted with a virulent disease of the genital organs which they ascribed to the vengeance of Bacchus for the negligent or insufficient observance of the festivals in his honour, the Dionysia and Phallica. With the view of appeasing the offended deity these orgiastic ceremonies, which were probably borrowed from the Egyptian worship of Osiris, were re-instituted with great solemnity in Athens, a wooden representation of the phallus being carried in procession by men specially dedicated to the service. On reading the epigrams of Martial, and bearing in mind what is known from other sources of the social conditions then prevailing in the Suburra district of Rome, it is easy to imagine that ravages caused by the spirochæta pallida were described by that very acute observer.

I am, Sir, yours faithfully,

Worthing, August 7th, 1909. W. W. J.

AMATEUR PRINTING AS A HOBBY FOR MEDICAL MEN.

To the Editor of THE LANCET.

SIR,—May I, through the medium of your columns, suggest that if any of your readers happen to be amateur printers they should put themselves in communication with me? I would gladly supply information. Medical men find this hobby useful in a variety of ways (e.g., memoranda, lecture syllabuses, labels, bills), in addition to the artistic taste to which it ministers.

I am, Sir, yours faithfully,

E. H. BLAKENEY,
Hon. Secretary, Amateur Printers' Association.

Ely, August 9th, 1909.

Corrigendum.—In a report of the proceedings of the Central Midwives Board on p. 409 of THE LANCET of August 7th, the third sentence of the "Leaflet" on ophthalmia neonatorum begins "It generally arises." We are asked to say that this should read "The disease generally arises."

L.R.C.S. is advised not to enter into any such negotiation. His position as a medical man might, under the proposed agreement, be used to give a professional colouring to some very dubious proceedings.

Enamel.—We have no knowledge of the preparation in question, but if our correspondent will forward us a sample we shall be pleased to analyse it.

A Widow has neglected to supply us with her name and address. If these are sent we may be able to forward her wishes.

Perplexed has failed to entrust us with his name. The communication is of considerable interest.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Lecture:—Surgical Registrar: Demonstration of Cases in Wards. 12 noon, Pathological Demonstration:—Dr. Bernstein. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Dunn: Diseases of the Eyes. 2.30 P.M., Operations. 5 P.M., Lecture:—Mr. Pardoe: Difficult Micturition and Retention of Urine.

TUESDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. 12.15 P.M., Lecture:—Dr. Pritchard: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Operations. Diseases of the Skin. 5 P.M., Lecture:—Dr. Low: Insects as Carriers of Disease in Tropical Climates.

WEDNESDAY.—10 A.M., Dr. Davis: Diseases of the Throat, Nose, and Ear. Diseases of Children. 12.15 P.M., Lecture:—Dr. G. Stewart: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Harman: Diseases of the Eyes. 2.30 P.M., Operations. Dr. Robinson: Diseases of Women.

THURSDAY.—10 A.M., Lecture:—Surgical Registrar: Demonstration of Cases in Wards. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Dunn: Diseases of the Eyes. 2.30 P.M., Operations.

FRIDAY.—10 A.M., Lecture;—Medical Registrar: Demonstration of Cases in Wards. Dr. Moullin: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Operations. Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Davis: Diseases of the Throat, Nose, and Ear. Diseases of Children. Mr. Harman: Diseases of the Eyes. 2 P.M., Medical and Surgical Clinics. X Rays. 2.30 P.M., Operations. Dr. Robinson: Diseases of Women.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (16th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.).

TUESDAY (17th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College 2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M., Ophthalmic, 2 P.M.), Tottenham (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

WEDNESDAY (18th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan 9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

THURSDAY (19th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (Gynæcological, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, (9 A.M., Major, 2 P.M.).

FRIDAY (20th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.) Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.), Central London Throat and Ear (Minor 9 A.M., Major, 2 P.M.).

SATURDAY (21st).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M.), West London (2.30 P.M.).

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MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

The Index to Vol. I. of 1909, which was completed with the issue of June 26th, and the Title-page to the volume, were given in THE LANCET of July 3rd.

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(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, August 12th, 1909.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Aug. 6	30·23	E.	...	122	80	58	60	66	Fine
,, 7	30·14	E.	...	125	81	59	61	67	Fine
,, 8	30·13	E.	...	127	77	57	60	64	Fine
,, 9	30·03	E.	...	126	81	57	58	62	Fine
,, 10	30·17	E.	...	119	80	61	63	67	Fine
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,, 12	30·20	W.	...	126	82	59	62	69	Fine

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